50 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

October 1954



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Power and higher
torque in the
aconomical eperating range
pays off in more
yardage at lewer







CRUSHERS
Suda Diesels'
heavy duty design big displacement and fuelsaving combustion rystem guarantes longer opsration with less
maintenance at
lowest all around

BUDA

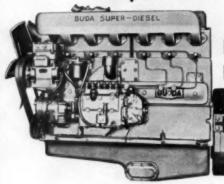
Division of Allis Chalmers Manufacturing Co.



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- HIGHER TORQUE—up to 14% higher torque at normal operating speeds—gives greater lugging ability—less shifting—faster trips—greater operating economy.
- LONGEST LIFE—Buda Diesels are averaging 6000 hours and up before overhaul in toughest service. Heavy duty construction—clean, simple design...controlled turbulence combustion with lower peak pressures means longer operation with less maintenance cost.

A Complete Line

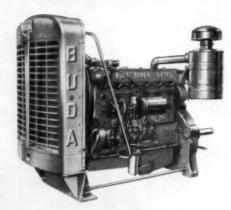


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19 Models 5 to 510 HP

POWER

21 Models 5 to 510 HP



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FOR EVERY NEED



Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

B.F.Goodrich



All-nylon tires end tire failures for rock products company

TRACY Rock and Gravel Company trucks are scheduled to make the round trip between quarry and crusher in 8 minutes. Such close timing is necessary so that this Tracy, Calif., firm can keep its output up to the demands of the construction industry. Setting the pace is one thing, maintaining it another.

Tires broke and treads separated under

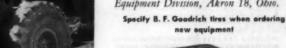
30-ton payloads. Some tires lasted only 100 hours. Valuable time was lost. Maintenancecosts soared. But B. F. Goodrich all-nylon tires solved these serious problems, Chief Mechanic W. S. Floyd reports. After 2 years on the job, "they've never been off the rims!"

Nylon is stronger than ordinary cord materials, can withstand double the impact. All-nylon tires last far, far longer, put an end to premature tire failures. Tracy uses all-nylon Super Traction

Tracy uses all-nylon Super Traction tires because the wide tread gives greater flotation. The all-nylon Universal tread gives full traction in forward or reverse. And the all-nylon Rock Logger

tire resists rock cuts.

All B. F. Goodrich Rock Logger and Universal tires (sizes 12.00 and larger) are made in all-nylon construction. Smaller sizes in all-nylon or rayon. See your B. F. Goodrich retailer today. His address is listed under Tires in the Yellow Pages of your phone book. Or write The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.





ALL-NYLON SUPER TRACTION tires pull through grueling time schedule under 41-ton gross weight.



UNIVERSAL TREAD guards against dangerous slippage, keeps trucks moving. Maintenance costs are cut.





Cables in concrete "I" beam are stressed to pre-determined tension by 60-ton Simplex "Janny" Hydraulic Puller equipped with pressure indicating aguae.

Hydraulic Puller Prestresses Concrete Faster, Safer, Easier

"Center-Hole" pulling, an exclusive feature in Simplex Pullers, has simplified prestressing jobs, according to concrete construc-tion men. The "Center-Hole" construction of the Puller, they explain, permits tension-ing cables or rods to be drawn through the center of the tubular ram. This eliminates torque, dangerous off-center pressures and complicated back-up devices—actually makes pulling 75% easier. The Simplex "Jenny; illustrated above, is a self-contained unit which serves as its own back-up or can be used with a simple chair, reducing set-up time. Simplex "Center-Hole" Pullers are available in capacities from 30 to 100-tons and inself-contained or remote controlled units. They may also be used as powerful hydraulic jacks and presses as well as pullers.



SIMPLEX "RE-MO-TROL"—Remote-Controlled Unit her am connected to hydraulic pump by high pressure her tarke, convenient use in tight spots and dangero locations. A pressure gauge may be installed for checing tensioning pressure.

free BULLETIN SHOWS HOW Illustrates application of all models of Simplex Hydraulic "Jenny" and "Re-Mo-Trol" Pullers for prestressing concrete and for other construc-tion uses. Write for copy of Hydraulic 53.



TEMPLETON, KENLY & CO. Brondview, Illinois

CONSTRUCTION

Volume 36

Volume 36 Number 10 METHODS Established 1919

October 1954

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HETHODS AND EQUIP

On the Cover

Tennessee Valley Authority Gradall digs footing excavations for a steam plant in vast power expansion program. TVA owns 13 Gradalls, mounted on FWD trucks with 6x6 drive, gets high annual utilization by keeping them busy on all kinds of work all over its far flung empire. Gradalls dig most footing holes for transmission line towers, then do backfilling and tamping around completed structures.

REPRINTS ON LABOR RELATIONS: You can get reprints of CM&E's valuable three-part series of articles entitled, "How to Improve Contractor-Labor Relations," by writing to the Editor at 330 W. 42 St., New York 36, N. Y. The articles tell what contractors can do to gain good will and eliminate many work stoppages. Unions also speak their piece, and there are many good tips to help job supers. Single copies, 15c; 10 or more, 10c each.

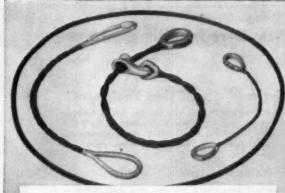
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Braided Wire Rope Slings

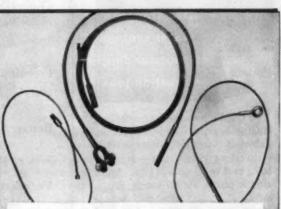
Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body eticles in Pound. and illustrates many types and body styles in Round-Braided, Flat-Braided and Single-Part Slings. Specify Bulletin 5308.

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Pay Dirt in This Issue

October, 1954

What's the Current Value of Used Equipment? . . What kind of an average price can you get for used equipment? Is it worth more in the East, Middle-West or the West? How do 1954 prices compare with 1953? Here are some an-

swers in a report on recent auction sales across the nation.

Unique Drop-Hammer Rig By mounting a drilling mechanism on top of a crane, a New Jersey contractor has developed a different drop-hammer that strikes 50 times a minute and releases nearly 25,000

King-Size Hot-Mix Plant

ft-lb of energy per blow. It requires no air or steam.

The largest continuous-mix asphalt plant made is turning out nearly 200 tons of hot-mix per hour to complete the southern end of the Garden State Parkway rapidly.

Detailed form planning before the job begins is necessary to make a satisfactory profit through reuse of material, faster erection, stripping and placement of concrete.

Freezing Makes Shaft Singing Easier

Hole progresses steadily downward as all excavation and lining of the sides are done under dry conditions.

Better Air Ups Engine Life and Output

Recommendations by an engine maker on how to protect construction engines on the job with cleaner intake air.

Vermiculite Has a Lot to Offer

Expanded vermiculite plays big part in lightweight structures and fireproofing. Lots of ideas for builders.

Twin-Engine Tractor Packs Plenty of Push

Euclid's first crawler, the TC-12, carries two 190-hp engines, each driving one track. It's fast and powerful.

Drill Jumbo Speeds Tailrace Excavation

A drill jumbo mounts 14 drills in a row and pulls itself over a rocky river bed by sliding on aluminum rails.

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NEXT MONTH

Clearing the land for a reservoir can be a rugged job, especially when the area includes all types of terrain. Read in the November issue about a specialist in land clearing and about his advanced ideas on the subject.

CUTS Winter Concreting Costs







FRAME CONCRETING on Hammel Houses, 14 seven-story buildings, began November 16, 1953. CAYE CONSTRUCTION CO., INC. had a Winter job on their hands, and as they put it, there wasn't any question, the cement to use was 'Incor'.

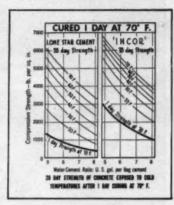
With 'Incor' 24-Hour Cement and one-day heat-protection, forms were stripped and re-used in 24-48 hours, averaging 1.3 floors a day, even at lowest outside temperatures. Heaters using propane cylinder gas provided clean, uniformheat, with minimum labor costs.

The Contractor figures 'Incor' saved two months' time and cut heating costs by two-thirds, saving \$1. per cu. yd. of concrete.

Concrete design called for 550 lbs. cement per cu, yd., and 3000 psi 28-day strength. Tests showed strengths uniformly close to 4000 lbs... field corroboration of data summarized in graph, shown at right, above.

The saying—"Any time is 'Incor's time"—goes double in cold weather!

*Reg. U. S. Pat. Off.



HAMMEL HOUSES, Rockaway Beach, N. Y.

NEW YORK CITY HOUSING AUTHORITY
Architects: LORIMER & ROSE, New York

Structural Engineers: ROBERTS & SCHAEFER, New York

General Contractor: CAYE CONSTRUCTION CO., INC., Brooklyn, N. Y.

Ready-mix 'Incor' Concrete: COLONIAL SAND & STONE CO., INC.,

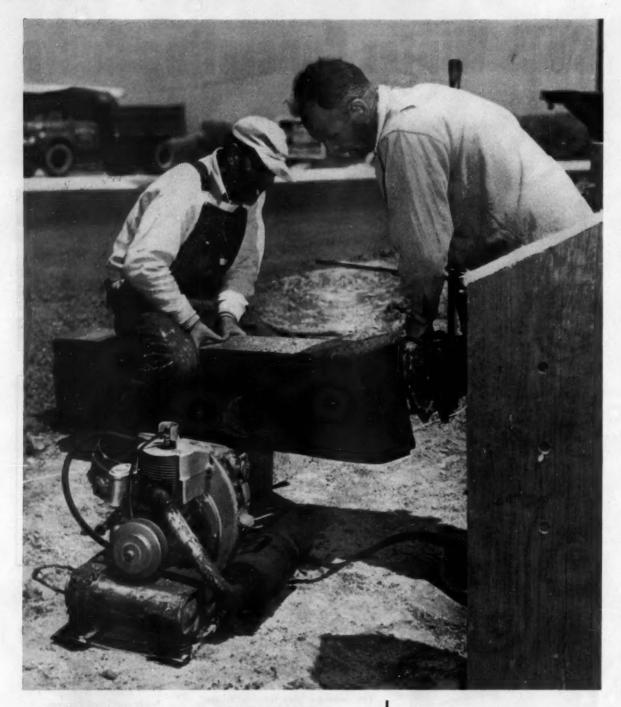




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More NORTHWESTS than any other make (over 100) YORK THRUWAY

and NOW! already over 50 NORTHWESTS on the OHIO TURNPIKE! (more than any other make)



Chicago 3, Illinois

- One of several Northwests owned by Ralph Meyers Construction Co. in a heavy rock cut.
- A Northwest Truck Crane pours condicate for D. W. Winkelman at Boardman Branch near Youngstown.
- R.B. Poteshnick grading near Ravenna.
- Peter Kiewit Sons Co. and Condon mingham Co. Northwest pouring process piers at Ohmsteed Falls.
- A Northwest Dragline owned by Terry & Wright handling some of the drain-age work at Wausson, Ohio.

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS-CRANES-DRAGLINES-PULLSHOVELS

More and More SYMONS® Cone Crushers

.. THE MACHINES THAT REVOLUTIONIZED CRUSHING PRACTICE . .

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Symens Cone Crushers are built in Standard, Short Head and Intermediate types in capacities from 6 to 900 tens per hour.

For sizing operations, Nordberg offices a broad line of Symons Vibrating Screens and Grizzlios in a wide range of types and sizes to meet practically every separation problems.





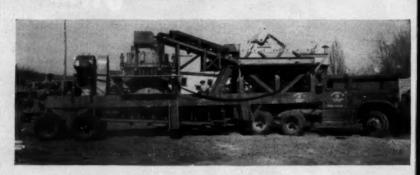
To meet today's challenging competitive problems, successful contractors and producers of crushed aggregate and construction materials must utilize portable plants . . . for mobility and ease of transport to the job site is essential.

Symons Cone Crushers and Symons Vibrating Screens have long been widely accepted by successful producers for efficient stationary rock, ore and mineral processing plants . . . and now, increasing numbers of successful operators of portable and semi-portable plants are using these sturdy, economical units for big capacity of fine product.

Shown on these pages are just a few typical examples of the way in which Symons Cone Grushers and Screens are serving the contractor.

Whether you are a contractor, operator, highway construction engineer, designer or manufacturer, it will pay you to specify and use Symons Crushers and Screens.

Clip and mail the coupon for your copy of the complete Nordberg brochure showing a wide range of suggested portable and semi-portable plant arrangements.



Symons 4' Standard Cone Crusher with conveyor and screen on portable secondary crushing unit operated by F. R. Hewett Co., contractors in Washington.



Symons 22" Intermediate Cone Crusher in a complete crushing and screening plant built by a prominent manufacturer of portable plants.



Symons 3' Standard Cone Crusher with power unit and conveyor mounted on a trailer. Locally built in Oregon.

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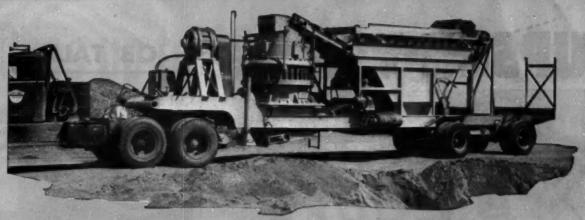
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DIESEL ENGINES 10 to over 10,000 hp.



Symons 4' Standard Cone Crusher and double-deck Symons Vibrating Screen—electrically driven—locally built—Thornton Construction Company, Michigan.

Contractors have MOBILIZED Crushing Operations



F. R. Hewett Construction Company's portable crushing plant with trailer mounted Symons 3' Standard Cone Crusher.



Symons 3' Standard Cone Crusher 4' x 16' deuble-deck Symons Vibrating Screen, electric-driven, wheel-mounted aggregate plant—locally built—Standard Paving Comaggregate plant-pany, Canada.



Symons $4\,V_4{}'$ Standard Cone Crusher, Diesel engine powered, large capacity crushing unit—locally built—Canyon Construction Company, Idahe.



Symons 4' Standard Cone Crusher with power unit and conveyor mounted on trailer. Dibble Construction Company Ltd., Canada.

NORDBERG MFG. CO., Milwaukee, Wisconsin I



D



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... About Methods



Electrode Removes Heavy Weld Metal

A large, thick band of stainless steel weld metal was removed efficiently from a shovel dipper recently with a special electrode devised for gouging metal by Eutectic Welding Alloys Corp.

A 6-yd dipper, weighing 81/2 tons and costing approximately \$9,000, had become worn around the lip and lower body to such an extent that it became necessary to replace or repair it. The dipper had been manufactured in two parts, so that it was possible to renew the worn section by separating it from the upper body and installing a new lower lip.

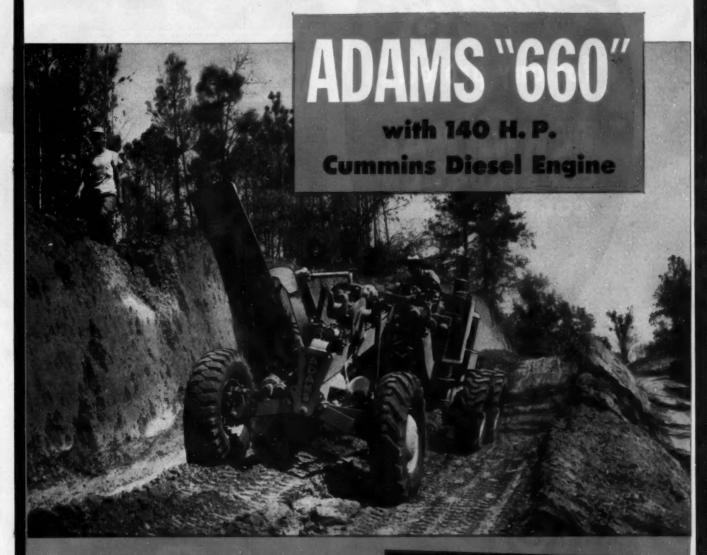
The upper portion is manganese plate, and the lower is a manganese casting, held together with some 300 in. of weld metal 2 in. wide and varying in depth from 21/4 to 51/4 in. To gouge out the heavy deposit, it was decided to use Eutectic's ChamferTrode.

Weld areas were marked so that the operator could follow a definite line. The machine was set at 300 amp for a 5/32-in. electrode. When the arc was struck, the electrode was held practically vertical and moved steadily forward. The heavy coating of the ChamferTrode was consumed more slowly than the core, resulting in a crater through which the arc was concentrated, blasting metal out ahead of the arc.

Depth of cut could be controlled. as necessary, to preserve the flange extending from the upper section

(Continued on page 17)

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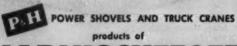
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CM1054



Look at the size and scope of these recent projects by Terminal Construction Corporation. Here's where schedules must be kept if costs are to be controlled. And Terminal Construction Corporation found the solution to equipment delays in the versatility and dependability of P&H power shovels and cranes. Their all-welded steel construction takes on the big lifts and the tough jobs. And their modern precision control gets any job done quicker, safer, at less cost in the long run.



HARNISCHFEGER

CORPORATION

MILWAUKEE 46, WISCONSIN



A P&M Model 8558 2 cubic yard shovel excervating 86,000 yards of earth in preparation for the construction of 11 multiple-story buildings for the City of Newark.



Construction of buildings and treatment facilities at Beyonne Sewage Treatment plant. Note the PAH Model 955A LC handling a 2 cubic yeard concrete bucket on a 90-feet heavy-duty boom at maximum possible radius.

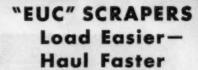


Sewage treatment plant at Little Ferry, N.J., with sewage disposal to serve 11 surrounding communities. That's a P&H Model 8558 LC crane handling heavy plant equipment in extremely close quarters.



Slum clearance project for Newark Housing Authority. Here two P&H Model 955A LC crones, each with 170-fact overall boom, pour con-

Faster Cycle Time and more Pay Yards!



On short hauls as well as long ones—and in all types of material—"Euc" Scrapers move more pay yards per hour because they are easy loading and maintain fast cycle time. They have the power and traction needed for fast loading, high travel speed and for working on steep grades with full payload.

At McGuire Air Force Base in New Jersey, for example, six "Eucs" with 300 h.p. engines and Torqmatic



Drives average 5 trips per hour on a 3000 ft. one way haul for Tecon Corp. of Dallas, Texas. On another section of this 750,000 yd. runway grading job, the fast cycle time of the Euclid 15.5 cu. yd. Scrapers enabled them to move 265 yds. each per hour on a 2000 ft. haul.

"Euc" Scrapers have struck capacities of 7, 12, 15.5 and 18 cu. yds—have your Euclid Distributor show you how they can do more work at lower cost per yard on your present or future work.

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izes maximum engine h.p. at all times.

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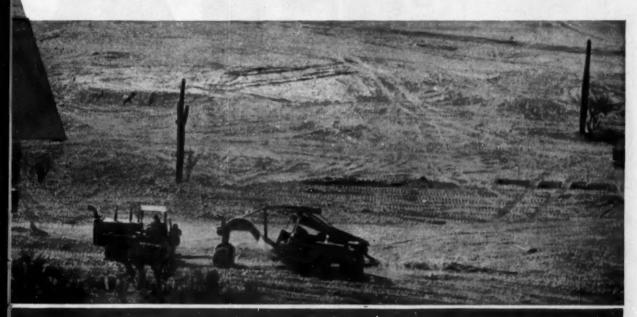


rain . . . what a place for Texaco Marfak! This rugged, world-famous chassis lubricant stays in the bearings, keeps dirt and moisture out, defies wear and prevents rust. Texaco Marfak gives you longer bearing life as well as considerably lower maintenance costs.

For wheel bearings, your most effective safeguard is Texaco Marfak Heavy Duty. Its tough, tenacious lubricating film seals out dirt and moisture . . . stays in the bearings . . . requires fewer repackings . . . adds to bearing life and braking safety. No seasonal change is necessary. Texaco Marfak Have Been Sold

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Let a Texaco Lubrication Engineer show you how to get more from your equipment at lower maintenance expense. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



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MIX with the plant that is truly portable.

Let us show you how a Barber-Greene Plant can reduce your costs.





JOB TALK . . . Continued from page 10

of the dipper, which had to be fitted into the slot of the new lower section to be applied later.

When the weld metal had been removed, two 25-ton hydraulic jacks were set inside the dipper and the two sections separated. Cutting out the weld and removing the worn-out lower lip took 18 hr.



Hung Scaffolding Saves Money

William MacDonald, Cleveland masonry contractor, figures he saved approximately \$1,500 and eliminated 90% of the scaffolding used normally on a recent building wall renovation job.

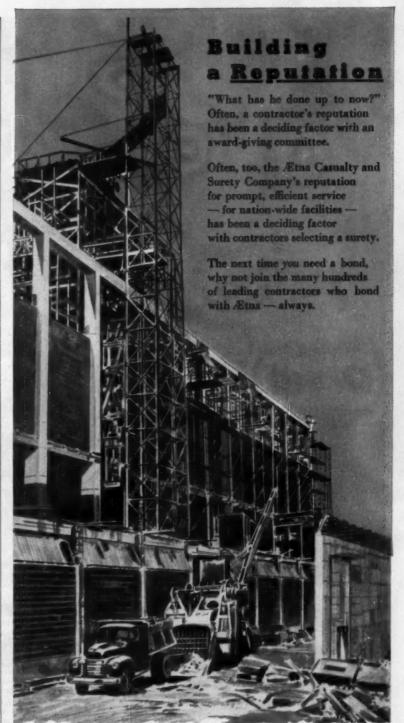
He removed and replaced brick on a parapet of the Hanna Building. Annex, in Cleveland, where mortar had disintegrated. To do the job, he hung scaffolding over the parapet, instead of building up a scaffold nine stories from the street.

The scaffold consisted of a 21 x 14-ft. tower made of Waco steel scaffolding on the roof with 22-ft. outriggers cantilevered out over the parapet. From the outriggers were hung Waco ladder frames, 30 in. wide, joined with toggle pins and spaced with pivoted cross-braces.

Frames extended down 19½ ft., were planked, and the sides and back of the work area enclosed with chicken wire for safety. The hanging scaffold was counterbalanced with 4,000 lb. of sand bags placed on scaffold members on top of the roof 15 ft. back from the parapet. The whole rig could be rolled along on casters over boards laid across the roof.

MacDonald notes these advantages for his hanging scaffold:

1. A substantial saving in the (Continued on page 22)



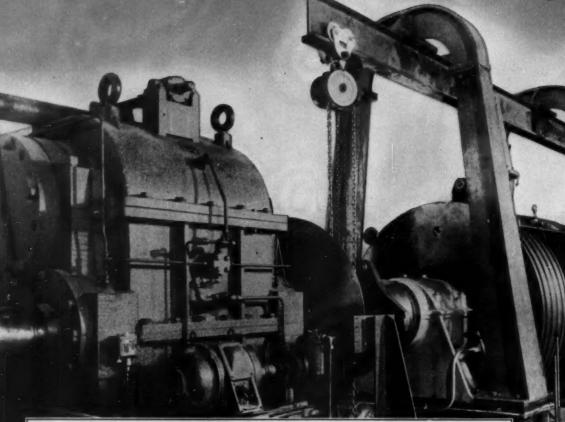
No job too big-no job too small

ÆTNA CASUALTY AND SURETY COMPANY

AFFILIATED COMPANISS: ATHA LIFE INSURANCE COMPANY
AUTOMOBILE INSURANCE COMPANY - STANDARD FIRE INSURANCE COMPANY
HARTFORD 15, CONNECTICUT



World's largest dynamometer Friction Material Testing





This new dynamometer—rated at 51,000,000 ft. lbs. K.E.—is the largest ever designed exclusively for evaluating friction materials.

Built with the precision of a fine watch, it consists of a driven shaft carrying adjustable flywheel discs. In operation, the huge flywheels are rotated at controlled speeds by means of electric prime movers. On reaching predetermined speeds a test brake lining or clutch facing cuts in to absorb the energy in the flywheel assembly.

The flywheel weights can be varied to match the inertia load of the widest range of vehicles—from light automobiles to the heaviest bus, truck, plane, machine or earth moving unit.

An electronic instrument panel automatically cycles the starts and stops during operation and at the same time accurately computes and records, torque, deceleration, brake input and temperatures.

Johns-Manville aspectos

designed for installed by Johns-Manville

Johns-Manville engineers and scientists
unveil new research facilities
especially created for the development
of high performance J-M Brake Linings
and Clutch Facings

THIS HUGE inertia dynamometer—

left—is only one of the many outstanding features of the new JohnsManville laboratory at Manville, N. J. Along with other precision units, its research facilities promise completely new standards for measuring and improving the effectiveness of friction materials of every type and for every purpose . . . now and for the future!

Whether the problem involves checking the clutch of a small power mower or a huge diesel shovel—or the brakes of a car, bus, truck, machinery or plane—the sensitivity and accuracy of this new equipment broadens the opportunity for the investigation, evaluation and development of high quality, high performance J-M Brake Linings and Clutch Facing.

The recognized leader in Friction

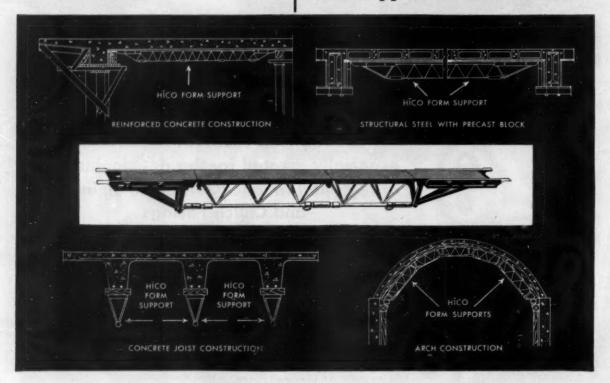
Material development for 70 years, today Johns-Manville produces materials that are specified and used as standard original equipment on many leading makes of new automobiles, trucks, buses and industrial units. They are economical and dependable . . . provide stabilized friction for longer periods under grueling pressures and temperatures, withstand heavier shock loads and faster rubbing speeds.

The Johns-Manville engineering staff and the world's best equipped friction material development laboratory are at your service. Your Johns-Manville representative will gladly tell you more about this service... or write to Manager Automotive Division, Johns-Manville, 22 East 40th Street, New York 16, N. Y.



HICO supports adaptable to all type

adaptable to all types of construction



new horizontal form supports cut shoring costs up to 40%

TIME SAVING

Can be erected and stripped in ½ the time needed for ordinary form supports. No special tools needed. HICO steel supports are delivered completely assembled and tagged to show exact locations according to plans. Because no vertical center supports are needed, work can continue on floor below, cutting over-all construction time.

LOW COST

Savings in construction time naturally cut construction costs. In addition, reuse factor permits amortization of initial costs over many jobs.

LIGHTNES

Weigh 81/3 lbs. per foot, any section easily carried. *Trade Mark. Adaptability is one of the main reasons why HICO steel form supports save money. Each support is composed of sections of varying lengths. Special end pieces assure adaptability to all types of vertical supports. Using combinations of these components, complete horizontal supports in a variety of lengths up to 27 feet may be assembled in minutes. As a result, the same basic HICO sections can be used again and again on a wide range of construction projects. Other advantages are listed below.

DEFLECTION COMPENSATION

Tightening of special turnbuckle device at bottom of span controls camber of span which compensates for deflection due to slab weight; assures even, level surfaces.

EFFICIENCY

No center supports needed. Engineering design assures tremendous strength and exceptionally high resistance to buckling.

STRENGTH

STRENGTH
Carries forms and concrete on clear spans up to 27 feet.

DURABILITY

Each HICO section may be reused 100 times or more.

HICO FORM SUPPORTS may be purchased outright or leased with an option to buy. If leased, rental may be applied against purchase price. HICO engineers will be happy to consult with you concerning your particular requirements. In addition they will furnish detailed layout plans showing number and type of HICO form supports required and, if desired, will work with contractor at job site to familiarise him with all phases of the product.

U. S. Patent No. 2,687,193. Other Patents Pending.



For complete information, technical data and prices, write Dept. M-1, Webrib Steel Corp.

HICO ADJUSTABLE HORIZONTAL FORM SUPPORTS

A PRODUCT OF WEBRIB STEEL CORPORATION 120 Broadway, New York 5, New York. Digby 9-1650.

NOTICE TO DISTRIBUTORS. There are still some territories open in the United States. Write for details.

New Publications Available On Shovel-Cranes

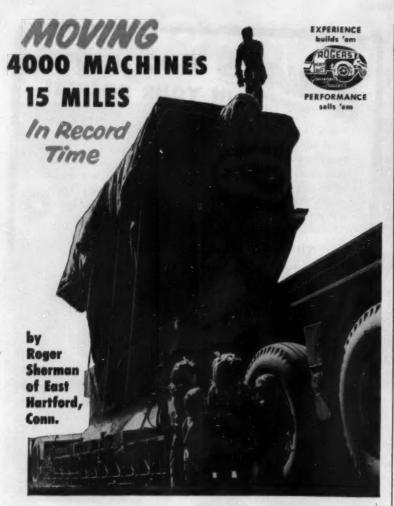
The publications listed below are available free on your request. Write to manufacturer giving title and job classification.

- TL-10 Truck Crane Job Picture Book

 -Full page illustrations and job data on
 Lorain 6-ton turntable for mounting on
 your truck chassis in the field.
- TL-15 "Series" Catalog—Complete catalog of the ½ yd. class Lorains—crawler and rubber-tire mountings.
- MC-104 Moto-Crane Catalog—Shows construction details and job views of the lowest priced Lorain on Lorain-built rubber-tire carrier. Rated: 6-ton as crane— 3/8 yd. as shovel.
- TL-25 "Series" Catalog—32 pages on the 3/2 yd. Lorain (173/2 tons as Moto-Crane). Covers Crawler, Moto-Crane and Self-Propelled mounted machines.
- TL "Series" Packaged Component Design—The inside story of the Thew-Lorain TL "Series". Lithographed in full color on transparent plastic. Shows major assemblies of turntable in cut-away views. Pages superimpose on one another to "build" the turntable.
- "50" Series Catalog—24 pages, in 2 colors of details and job views of the Lorain erawler-mounted 1-yd. machines.
- "524" Series Catalog—Describes the companion rubber-tire machines to the "50" Series (30-ton rating as cranes).
- "42" Series Catalog—This series available as Moto-Cranes and Self-Propelled only. Rated at 22½ tons as cranes.
- "79" Series Catalog—Covers construction details of the 1½ yd. crawler Lorain.
- "80" Series Catalog—The 1¾ yd. crawlermounted Lorain is covered by this catalog.
- "820-K" Series Catalog—24 pages, 2 colors. Detailed description and illustrations of the 2-yd. class Lorains. Covers all front ends.
- Charge-A-Paver Book—Describes a new front-end that lowers concrete paving costs. Includes operating procedure, pictures and details.
- Lorain Hoe Book—The application of Hoes from 3% yd. to 2 yds. is graphically covered in 16 pages. Full page job illustrations—operating data.
- Tilt-up Construction Book—This book demonstrates in words and pictures the importance of Lorain Cranes to this growing construction technique.
- Parts Kits Catalogs—Lorain Parts Kits for replacement and modernization are designed to save Lorain owners money. This 28-page catalog describes and illustrates those available.
- Scoop Shovel Book—Completely describes and illustrates the Lorain Scoop Shovel a front-end attachment for stock-piling, mining and low head-room applications.

All of the above literature is available from The Thew Shovel Co., Lorain, Ohio.





Give the expert heavy mover the proper tools and he'll do wonders as in this case.

The mover was Roger Sherman of East Hartford, Conn. The tools were Rogers Low Bed Trailers.

Records were established in moving 4000 machines 15 miles to the new plant of United Aircrafts Hamilton Standard Division.

For example, it was originally estimated that

20 days would be required to dismantle and move a 45 foot plating machine. It was moved intact on a Rogers Trailer in 2½ days.

Rogers Trailers make money for owners because they save money for those who engage them.

Get the Rogers Catalog and complete information about the entire line.

ROGERS BROS. CORP. ALBION, PENNA.

220 Orchard Street
Export Office: 50 Church St., New York 7, N. Y., U. S. A.—Cable Address: Brosites



Divided bed, tilt deck trailer with gooseneck.

JOB TALK . . . Continued from page 17

amount of equipment needed for the job.

 Scaffolding could be moved freely along the wall, despite variations in parapet height from 3 to 10 ft.

3. Workmen feel safer on it than on many other suspension rig-

gings.



Conveyors Aid Asphalt Plant

Switching mixes in a crane-fed asphalt plant usually requires at least an hour to make all the necessary adjustments and run out the remaining aggregates in the cold-feed hopper. Most of the temporary plants set up to pave New Jersey's Garden State Parkway were required to produce a bituminous sand-gravel mix for the base and also a bituminous concrete for the surface course. Because of the rush, the plants often had to switch.

Alexander Construction Corp., subcontractor to S. J. Groves & Sons Co., cut the switching time in half by using 30-in, belt conveyors to charge the dryer, instead of the usual combination of crane, cold hopper, and cold elevator. Three stockpiles were built up over timber bulkheads to feed the conveyors. One stockpile contained sandgravel for the base, another had fine sand for the surface course, and the third had trap rock. When the contractor wanted to change from the sand-gravel to the surface mix, he shut off the conveyor, allowed the bins to run out, and turned on the other two conveyors.

The three stockpile conveyors were powered by electric motors to achieve the best control of blending. Electricity was supplied by two generators powered by General Motors diesel engines. The Madsen 4,000-lb. asphalt plant produced about 120 tons of mix per hr.

Motorists: here's proof...

Gulf's cleaner-burning, super-refined gasoline solves today's No. 1 engine problem!



Laboratory tests promised...

. . . these immediate and lasting benefits from this new, super-refined fuel:

More complete engine protection than from the so-called "miracle-additive" gasolines. Why? Because Gulf refines out the "dirty-burning tailend" of gasoline (the No. 1 troublemaker in high-compression engines)—and then treats this new Super-Refined NO-NOX to give it a complete range of protective properties. It protects every part it touches against carbon, rust, gum.

Extra gas mileage in all your everyday, short-trip, stop-and-go driving.

No knock, no pre-ignition. Why? Because the anti-knock power of new Gulf NO-NOX has been stepped up to an all-time high.

Stall-proof smoothness. Instant starts, too—and fast, fuel-saving warm-up.

That's why new Super-Refined Gulf NO-NOX gives your engine more power-with-protection than you've ever known.



Road tests proved...

These cars, powered by New Gulf No-Nox, actually performed better than new...after 15,000 miles!

True! After 15,000 miles per car—covering all conditions of city and country driving—Gulf test cars showed these results:

- · Higher-than-new horsepower!
- · Better-than-new on gasoline mileage!
- And not a single trace of carbon knock or preignition at any time—even on the steepest mountain grades!

COMPLETELY NEW! SUPER-REFINED

New Gulf No-Nox

THE HIGH-EFFICIENCY GASOLINE



It's Your Business · · ·

Next Year Shapes Up Better

HERE'S GOOD NEWS for all contractors. Next year is shaping up as a better year than '54 for new heavy construction business. As we see it, heavy construction contracts will top \$15.2 billion in 1955. That would make it the second highest year on record in total contract dollars and about 6% more than the estimate of \$14.4 billion for 1954. The '55 estimate breaks down into a 12% rise in state and municipal construction which is expected to rise to a record high of \$5.8 billion. Of this, highways should account for \$2.4 billion, up 20%, and bridges for \$600 million, up 3%. Waterworks and sewerage are expected to run about the same as in '54, a 5% rise in public buildings and a 39% increase in earthwork and waterway construction (with a big chunk going for the St Lawrence Seaway and power plant) round out the picture of what we expect for major types of public works

Federal work should be up about 10% over the low '54 volume. However, if state and local and private construction boom in '55, some federal work might be held back until some future time when it could help bolster the economy, if it needs it. Budget trimming still goes on in Washington. Although construction appropriations for fiscal '55 were 18% more than for fiscal '54, there have been some sharp cuts in budgeted expenditures since those appropriations were made last July.

Private construction looks healthy for next year and should hold close to the current high level—perhaps show a small 1% increase. Commercial building should climb about 6% in '55, and industrial building is expected to show a similar increase after the '54 slump.

Housing has been very strong all year, and while we have called a 6% decline in '54, it might turn up just the opposite. We have been off base before in that category.

More Work on the Boards for '55

We just checked 679 consulting engineers, architect and architect-engineer firms across the country, and 73% of them have as much or more work now on their boards scheduled to go to contracts in '55 than they had a year ago for '54 contracts.

Of these firms, 46% have more construction set for contract awards next year than they had a year ago, while 27% have about the same volume as at this time last year. Only 25% reported less work set for '55 than they had scheduled for '54 a year ago.

Furthermore, 68% of these firms report that new jobs are coming in as fast or faster than a year ago.

Report Big Increase in Dollar Volume

Jobs now on the boards and scheduled for '55 contracts have a total estimated cost of more than \$4.2 billion, 24% more than the value of work a year ago. Biggest gain in the dollar value is reported by big

firms in the Far West which have a 31% increase over this time last year. In New England, the Middle Atlantic and the South, firms report that the volume of work on their boards for '55 is 24-28% above a year ago. Smaller increases are reported west of the Mississippi, up 17%, and in the Middle West, up 10%.

Public Work Is Most Active

According to the survey, public work is more active than private work in all regions of the country except the Middle Atlantic. Public work has a slight edge over private in the Middle West, but has a pronounced lead in the other sections of the country.

Of all the companies reporting, 50% said that public work is more active today than private. But in the Middle Atlantic states, 57% of the firms reported that new private work was coming in faster than public.

So it looks like public works, mainly state and municipal, will be the key opening the door to a bigger construction year in '55. A glance at the volume of money that the state and local governments have been borrowing—up 26% over '53 so far this year—and the large volume of bonds approved at local elections—up a whopping 66% over '53 in the first eight months of '54—confirms this optimism for public works construction in the next twelve months.

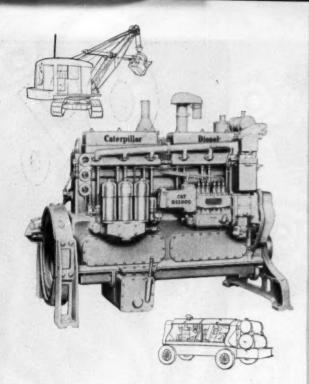
The lower interest rates now available to state and local government borrowers have been an important factor in the large volume of new financing. In August, the average interest cost on high-grade municipal bonds (2.23%) was down to the level of August 1952 and was only three-quarters as much as the postwar high reached in July '53.

Equipment Shipments Turn Upward with Contracts

Following closely the trend in heavy construction contract awards, construction equipment shipments turned sharply upward in the second quarter of this year. The improvement came in all major types of excavation and earthmoving equipment. However, shipments were still well below the second quarter of 1953.

With construction contracts in the third quarter running at the second highest level in history (and the highest if you exclude the \$2.1 billion in atomic plants in July and August of '52), contractors will probably keep the equipment rolling to them for the rest of this year. This is especially true since next year looks to be better than '54 in terms of new heavy construction contracts.

SOME BIG CONTRACT AWARDS OF THE MONTH
Pages 32 and 206



Announcing the

NEW 190-HP CAT D13000 ENGINE

CATERPILLAR ADVANCED DESIGN FEATURES IN THE NEW DISCOO

While retaining such time-proved features as aluminum alloy main and connecting rod bearings, "Hi-Electro" hardened and Superfinished bearing surfaces, exclusive Caterpillar fuel injection system, ability to use low-cost No. 2 furnace oil without fouling, etc., the new D13000 incorporates many new features, among them:

NEW Valves, Inserts, Rotators—new components, standard in the breathing system, combine increased breathing ability with longer valve life—make possible additional horsepower output and lower maintenance costs.

NEW Vibration Damper - sturdy, metal-enclosed, fastened directly to front of crankshaft. Keeps unit vibration-free at higher speeds. Optional in installations where engine speed is kept below 1000 r.p.m.

NEW Comshaft—improved high lift cam profiles give smooth valve seating and increased breathing ability. This increased capacity, also made possible by new oil-bath air cleaner and larger intake and exhaust manifolds, insures low exhaust temperatures and adequate reserve power.

NEW Water Pump - larger, with a greatly increased capacity to answer cooling needs of this modern, high-powered diesel.

NEW Pistons—oil-cooled, made of high-strength, lightweight aluminum alloy with stainless-steel heat plugs in the high-temperature zone and cast-in iron bands for the top ring groove to give best service at lowest final cost.

NEW Oil Pump—features not just one, but two pressure controls to assure correct lubrication for all moving parts from the first turn of the crankshaft.

For complete details, specifications, attachments, etc., see your nearby Caterpillar Dealer

...yours for greater power, production, profits!

For years, working in all kinds of construction equipment, conditions and jobs, the Caterpillar D13000 Engine has proved itself a big money-maker for power users. Now, here's a new D13000, designed and built to bring you even greater power, production and profits!

In the new D13000, you get 21% more brake horsepower. Its governed speed, raised to 1200 r.p.m., provides greater versatility and productive capacity. While keeping outstanding, time-tested parts, it adds advanced design features to set new standards of stamina, dependability, economy and long life. And its wide variety of matched accessories and attachments makes it readily adaptable for any need.

For jobs requiring power in the 145 (continuous) to 190 (intermittent) horsepower range, your best buy is this rugged new Cat D13000 Engine. Leading manufacturers of excavators, crushers, compressors and other heavy-duty machinery can furnish it in their equipment. Get the *complete* facts about it today from your nearby Caterpillar Dealer.

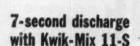
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR'



Johnson 50 to 125-yd. Roadbuilders plants

Flexible All-Welded Roadbuilders Bin gives you a portable batch plant for 2, 3 or 4 aggregates, or converts to transit-mix (shown) or centralmix plant for bulk cement and 2 or 3 aggregates. Can be equipped with 1 or 2 multiple material Hi-Speed Batchers, size 34 Roadbuilders Batcher, or truck-mixer charging batcher in 2, 3 or 4-yd. sizes. Bin available with 2, 3 or 4 compartments, 50 to 125 cu. yds. Also: silos, elevators, buckets. C. S. JOHNSON • Champaign, III. (Keehring Subsidiary)



Saving important seconds on every batch of concrete, tilted Flow-Line Discharge Chute pours full 12.1 cu. ft. batch in 7 seconds. Kwik-Mix 11-S Dandie® also has side or end discharge, 2 or 4 wheels, and special tower attachment. Other sizes: 3½-S to 16-S. Also check Kwik-Mix bituminous, tilt and non-tilt plastermortar mixers . . . and Moto-Bug® (power wheelbarrow) shown here. Ask your Kwik-Mix distributor for all facts.

KWiK-MIX • Milwaukee, Wis. (Keehring Subsidiary)

17½ feet per minute with 202 Trenchliner®

On utility, drainage and irrigation trenching, you can dig up to 17½ ft. per min., 13 to 31 in. wide, in depths to 6 ft. with this 202 wheel-type Trenchliner. It has: square or round-bottom buckets; quick-change bucket fronts with cutting lips or "Tap-In" teeth; 16 or 20-in. crawler shoes; gas or diesel engine. Tile box and chute optional. Also check 215 wheel-type; 3 big ladder-types, full crawler mounted; utility Trenchliner on rubber.

PARSONS • Newton, Iowa (Koehring Subsidiary)

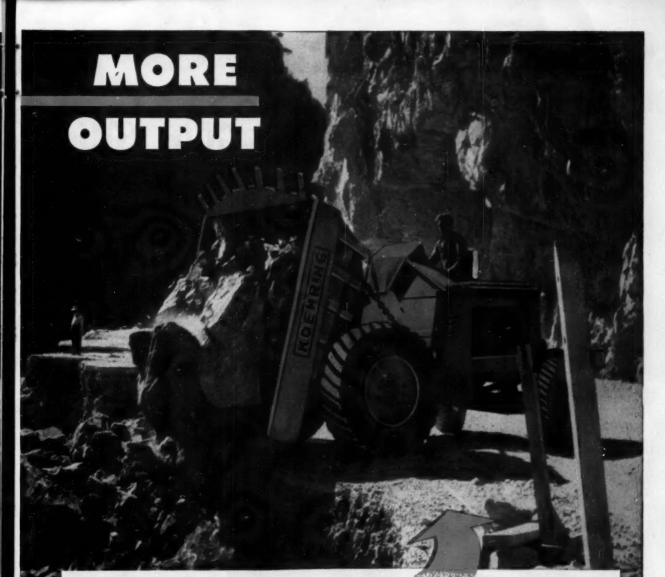








GRAVITY DUMP never balks . . . never wears out. You get the same one-second dumping every time . . . under heaviest loads, and in all temperature extremes. There are no hoist maintenance delays, no costly hoist replacement parts to eat into profits when you use gravity-dump Dumptors.



... with ONE-SECOND gravity dump

In just one second, Koehring heavyduty Dumptor dumps its 6-yard load. Operator trips the body-release lever, and gravity tilts the scoop-shaped body 70°. One second later the load is out, and Dumptor is on its way back for the next load.

Because there's no waiting for slow-acting body hoists, Dumptor saves 15 to 25 seconds on every dump. This earns an important increase in extra yardage output. For example, take a typical 1,000-foot haul where an ordinary dump truck is making 16 trips an hour. Even if Dumptor took the same time to load, haul and return, it would average $17\frac{1}{2}$ trips per hour on the same cycle. That's because Dumptor's one-second dumping advantage saves an average of 20 seconds on each trip . . . gains a total of 5.3 minutes more productive haul-time per hour. This, alone, adds 9% more yardage to your average hourly production.

What's more... by eliminating only 2 turns each trip, Dumptor no-turn shuttle-hauling adds another 10% increase in yards per hour. You'll find Dumptor® well worth looking into. See your Koehring distributor soon.

CKRRS

KOEHRING COMPANY



MILWAUKEE 16, WISCONSIN



MASTER BITUMINOUS PLANTS GIVE YOU

BIG-VOLUME OUTPUT TO LICK TIGHT SCHEDULES

The twin-shaft mixing unit of the twounit Master Plant enables you to meet, and profit, by today's high speed operations and the demand for big volumes of mixes which meet exacting specifications. This self-contained, highly portable unit will handle a continuous flow of volumetrically proportioned aggregate . . . either a single aggregate or a blend of sizes . . . and a constant flow of accurately controlled bitumen to produce 200 or more tons per hour of extremely uniform bituminous mixture.

ACCURATE GRADATION TO MEET THE MOST EXACTING SPECIFICATIONS

When accurately proportioned blends of two to four sizes of aggregates are required, the Master Plant's gradation control unit assures your meeting the strictest specifications for continuous-flow type mixes. It is perfectly balanced to give the utmost in production at the lowest possible cost. Optional equipment includes a fines feeder, bulk mineral filler handling equipment and overflow return conveyor. Both mixing unit and gradation unit of the Master Plant are quality-built throughout to insure low maintenance costs.





Commander Crushing and Screening Plant



Motorized Head Pulls



Vibratory Soil Compacts



Model 6-60 6000-lb.



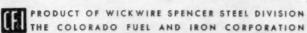
today—it's a bigger catch with MUSCLES OF STEEL

Five billion pounds of fish yearly. It's a catch that would make the oldtime Gloucester fisherman gasp—yet it's all in the day's work for America's modern fishing industry. And it's a job that couldn't be handled without the aid of muscles of steel—indispensable wire rope.

Whether off the Newfoundland Banks, along the Gulf Coast, or in the waters of the Pacific, powerful winch-equipped trawlers depend on Wickwire Rope to haul in their heavily laden nets. On landlubber assignments, too, Wickwire Rope has a vital role in helping American industry do a better and more efficient job. In the oil fields and the logging camps. In the mines and the quarries. On construction and highway projects. In numerous and varied materials handling operations. On all of these jobs, Wickwire Rope consistently demonstrates its ability to deliver performance that is unrivalled for long-lasting economy and reliability.

every industry benefits from wire rope

WICKWIRE ROPE







2534

THE COLORADO FUEL AND HIGH COPYORATION ADMINISTRACE - Server - Newston - Odeska (Tox.) - Phones: - Selt Leke City - Tules
PALIFIC COAST DIVISION - Los Angeles - Oakland - Partiend - See Francisco - Sectile - Section - Sectile - Section -

You can always depend on

There are many uncertainties in the contracting business, but equipment performance does not have to be one of them. The right types of equipment, dependable makes of equipment, and proper preventive maintenance go far to forestall trouble and insure profitable contracts.

When choosing tractor-shovel equipment, you'll be wise to pick "PAYLOADER". First, because you can be certain that whatever "PAYLOADER" you choose, it will be a thoroughly job-proven model with thousands in service throughout the world. Second, because you can select the proper size and type you need from the complete "PAYLOADER" line. Third, because your "PAYLOADER" Distributor is one of the best in the business, with complete parts and service facilities to keep your "PAYLOADER" profitably productive.



PAYLOADER



October 1954 — Construction METHODS and Equipment — Page 31

SOME BIG CONTRACT AWARDS OF THE MONTH

Madison Construction Co., 600 Woodward Ave., Detroit, Mich., 600 brick single houses in St. Clair, Mich. for Hannan Real Estate Exchange, Inc., 300 Lafayette Bldg., Detroit, Mich. \$8,000,000.

Bethlehem Steel Co, East 3rd St., Bethlehem, Pa., viaduct superstructure and Philadelphia anchorage to 2nd St. for bridge between Packer Ave., Philadelphia, and Gloucester, N. J. for Delaware River Port Authority, Administration Bldg., Camden, N. J. \$6,970,681.

Frank J. Rooney, Inc., 5880 N. E. 4th Ave., Miami, Fla., department store in Miami for Bessemer Properties, Inc., 1317 Biscayne Blvd., Miami Beach, Fla. \$3,000,000.

Pacella Bros., Inc., 247 Washington St., Dedham, Mass. Third Provin Mountain Conduit between Agawam, West Springfield and

Springfield, Mass. for the Board of Water Commissioners, Municipal Bldg., Springfield. \$2,324,590.

Leon A. Katz-Patrick-F. O'Callaghan Enterprises, 122 E. 42nd St., New York City, 17., shopping center on Lincoln Highway and Route 413 near Levittown, Penndel, Pa. \$41,-000,000.

Ragnar Benson Inc., 4744 W. Rice St., Chicago 51, Ill., home electric appliance factory at Chicago for Dormeyer Corp., Damen and Fullerton Ave., Chicago. \$5,000,000.

W. T. Price Dredging Corp., S.W. 27th St., Miami, Fla. and Blythe Bros Co., P.O. Box 989, Charlotte, N. C., airfield paving and railroad spur, Homestead Airforce Base, Homestead, Fla., for U.S. Engineers, P.O. Box 4970, Jacksonville, Fla. \$3,043,368.

Southeastern Construction Co., Box 727, Charleston, 23, W. Va., 11-story office building, Charleston, W. Va., for Columbia Gas System, United Fuel Co., 1033 Quarrier St., Charleston, W. Va. \$5,800,000.

Weymouth Construction Co., P.O. Box 319, Memphis, Tenn., and Ben M. Hogan Co., 1100 Fairview St., Little Rock, Ark., 145,000 sq. yd of overlay pavement for runway at Blytheville, Ark. Air Force Base for U. S. Engineers, P. O. Box 687, Little Rock, Ark. \$3,391,182.

The Savin Construction Corp., 10 Village St., East Hartford, Conn., grading, drainage, paving Hartford-Springfield Expressway, for Commonwealth of Massachusetts, Metropolitan District Parks Div., 20 Somerset St., Boston, Mass. \$2,775,683.

Frederickson & Watson Construction Co., 873 81st Ave., Oakland, Calif., and M & K Corporation, Financial Center Bldg., San Francisco, Calif., portion of bridge, pedestrian undercrossing, road work, at Eastshore Freeway at Oakland, Calif. for State Division of Highways, Public Works Bldg., Sacramento, Calif. \$1,661,111.

M. W. Kellogg Co., 225 Broadway, New York City, Petrochemical plant for 300 tons daily of anhydrous ammonia and additional processing to make nitrogen products in the Lima-Toledo area, Ohio, for Standard Oil Co., of Ohio, 3038 Broadway, Cleveland, Ohio. \$17,-000,000.

(More Big Jobs on page 206)



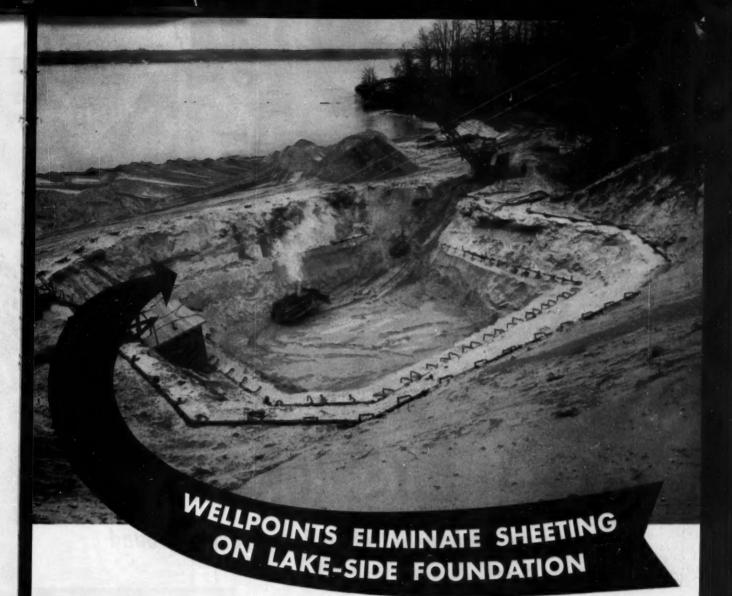
MORE THAN 60 ITEMS GIVE YOU COMPLETE SELECTION

You name it, we have it! 12 different packages of antiseptics; 15 various kinds and sizes of bandages and dressings; over 21 burn treatments; and more than 15 miscellaneous items, including eye treatment, snake bite kits, poison ivy ointments, and many others. Write for details.





MINE SAFETY APPLIANCES CO. 201 North Braddock Avenue, Pittsburgh 8, Pa. At Your Service: 82 Branch Offices in the United States and Canada



A two-stage Moretrench Wellpoint System controls 24' of water on this deep foundation for a pump station in Montague, Michigan. Material is fine sand with clay layers. No sheeting or bracing is needed. Contractor excavates with freedom and speed...in the dry!

It's possible to save money, time and trouble on a wet job. Ask our nearest office to show you how.

Catalogue on request

MORETRENCH CORPORATION

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Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontaria



We torture truck axles to

in the new Timken-Detroit indoor proving ground ...and only Timken has it!

We shock-load, abuse, and torture them. Match every conceivable hauling condition. Then add a few brutal tricks of our own!

Why? So you'll know in advance, and for sure, that a Timken-Detroit axle can take the punishment it was designed for. More rugged, grueling punishment than any other axle made!

To prove it, we capsuled a multi-thousand acre proving ground into one room. Here our engineers can put 50 years of experience in building axles for trucks, buses and trailers to work—subjecting axles and gearing *indoors*, to any *out-door* operating condition.

Such exacting research pays off for you in: longer axle life; less maintenance, repairs and downtime; reduced operating expenses. This is why Timken-Detroit axles are preferred by manufacturers and operators everywhere.





How TDA proves axle quality in this "Torture Chamber"

We pick one of our axles at random ... then duplicate a hauling condition, hour after hour, day after day ... simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going uphill with a full load from California to New York nonstop. There is no other axle testing like it in the world!

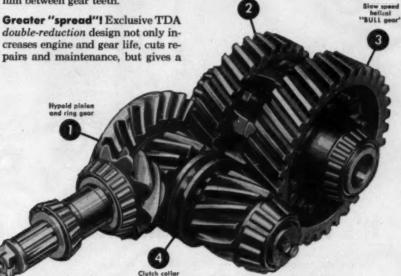
This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses... soft ground at full load... mountains... express highways or side roads. With special dials, recorders and electronic devices, he actually drives the axle with scientific accuracy from his chair!

How Timken-Detroit 2-speed axles with man-size gears, operate in any gear ratio indefinitely, without overheating!

The secret? A husky hypoid ring gear and bigger, stronger pinion set (No. 1 in illustration) provides the first step of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the second step. Both sets are of equal size and capacity - but one set (No. 2) is for fast speed-the other (No. 3) is for slow speed. The clutch collar (No. 4) moves to left or right to engage one "BULL gear" or the other.

The result: Complete elimination of small, complicated parts and midgetsize gears! Larger hypoid-helical design gives more teeth in contactreducing load per unit of contact area - for more positive, quiet operation. Bearings are larger. There's longer motor and truck life because wear on driving parts is less. When you divide the total gear reduction, you double its life expectancy. And the set of "BULL gears" not in use, always idles at greatly reduced speed. Special gear lubricant is not required. Heavier oil can be used-for a better oil film between gear teeth.

Greater "spread"! Exclusive TDA double-reduction design not only increases engine and gear life, cuts revastly greater gear ratio "spread" for all jobs requiring any range of speed or power. A fast gear ratio for light loads everywhere-full loads on the level. Slow speed ratio for full loads on hills-for better pulling in "soft





KWELL SPRING AND AXLE COMPANY

"TORTURE-TESTED" to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS

Plants at: Detroit, Michigan Oshkosh, Wisconsin . Utica, New York Ashtabula, Kenton and Newark, Obio New Castle, Pennsylvania

7 basic axle capacities! Only TDA, world's largest manufacturers of truck, bus and trailer axles offers a family of 7 basic axle capacities, each with interchangeable final drives: single-speed, single-reduction, singlespeed double-reduction, and twospeed double-reduction, using the same axle shafts and housing. Nowhere is there such a selection to fit all special needs.

Exclusive "Torsion-Flow" shafts! Forged so that grain structure of steel conforms to shaft profile, thus assuring uniform distribution of stresses. Exclusive heat-treating formula provides a resilient axle shaft core graduated to a tough, hard outer surface -the ideal combination for axle shaft life. And TDA "Torsion-Flow" shafts are guaranteed for 100,000 miles or 3 years-whichever occurs first.

Hot-forged steel housings! Pound for pound the strongest, most rigid ever built! Rectangular TDA housing shape gives maximum strength, uniform stress distribution, minimum weight. Ask about the TDA "Life of Vehicle" guarantee.



Introducing... Most power! Most speed in the heavy-duty, 3/4-yard class!



It's the LS-88... another NEW Link-Belt Speeder

LINK-BELT SPEEDER does it again! LS-88 is the first heavy-duty 34-yard shovel-crane with world-famous Speed-o-Matic power hydraulic control! This exclusive feature puts the operator in a class by himself. He works easier, faster, with less fatigue. Also, greater net hp puts more production at his fingertips.

And there's reserve maintenance-saving stamina—more "live" machine weight—to utilize this extra hp. It all adds up to more production minutes, yards-ahead output capacity . . . shift after shift, job after job!

SPECIAL NOTE TO TODAY'S SHOVEL-CRANE BUYERS

Before you buy a shovel-crane of any capacity for any application, check first with your Link-Belt Speeder distributor. Link-Belt Speeder is moving ahead with several great new machines available NOW and offering exclusive advantages for you!

LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

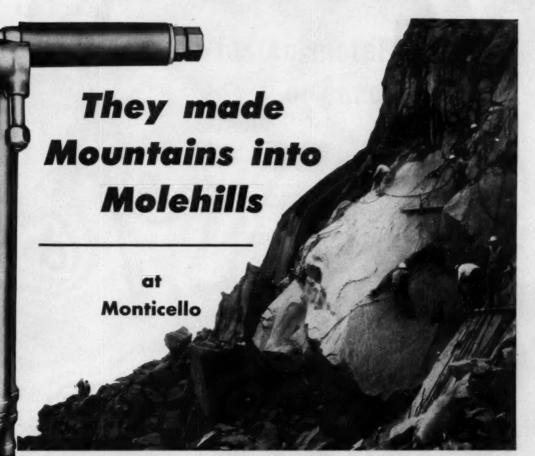
Typical LS-88 standard equipment features

- Longer lining life— Internal expanding clutches with alloy cast iron clutch shells give superior friction and wearing qualities.
- Greater horsepower —
 91 net hp at full load speed.
- Splined shafting and anti-friction bearings throughout upper main machinery.
- Patented advanced crawler — self-cleaning, smoother travel, longer life.
- Independent rapid beem hoist—with power control up and down.
- Gears running in oil —
 all horizontal deck
 gears and swing-travel
 bevel gears enclosed
 and run in oil.

13,673-

LINKBELT SPEEDER

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES



with JOY STREAK ROCK DRILLS



Stout ropes on men and equipment prevented plunges down the sheer rock cliffs to the river 600' below.

Joy Rock Drills helped to carve a 3.5 mile mountain highway out of solid rock at California's Monticello Dam. Cuts up to 250 ft. were gouged from sheer cliffs.

The Joy drills proved dependable and easy to handle. Their patented Dual Valves permitted more performance per weight than comparable drills. Cadmium plating, inside and out, aided lubrication and prevented piston scoring, rusting and corrosion.

For full details on Joy Rock Drills, write for free Bulletin 87-X to Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

*SILVER-LIKE COVERING OF CADMIUM PLATING

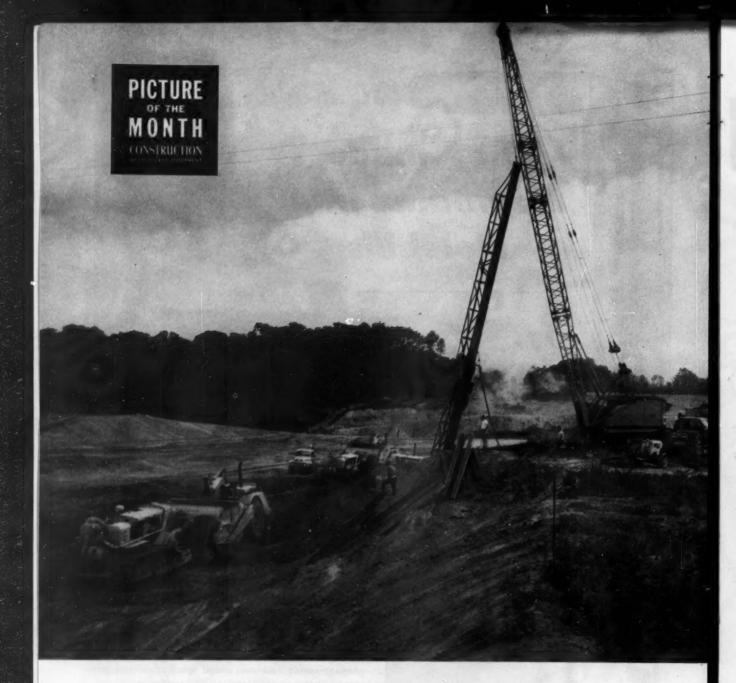
Consult a Joy Engineer

FOR AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • CORE DRILLS • BLAST HOLE DRILLS PORTABLE HOISTS • FANS • BLOWERS TUNNEL, QUARRY, MINE EQUIPMENT Å

CONSTRUCTION EQUIPMENT MANUFACTURERS

FOR OVER HALF A CENTURY

October 1954 — Construction METHODS and Equipment — Page 37



Driver Starts Overpass Foundation

PILES ON THE BATTER go down quickly for one of the numerous overpass foundations required along the swiftly paced Ohio Turnpike. This Insley WB truck crane with 70-ft boom and 48-ft leads handles a 50C Vulcan steam hammer and reaches out from 33 to 42 ft when picking up a pile—for a total load of 19,000 lb. The 5,000-lb hammer is operated by a Model 3000 Little-ford Kwik-Steam generator, with a capacity

of 3,240 lb of steam per hr. Equipment is working for Equipment & Supplies, Inc., Pittsburgh, Pa., pile - driving contractor, working on a section of the Pike near South Amherst under contract to Ralph Myers Contracting Corp., Salem, Ind. Grading in the cut is being completed by Myers crews with Caterpillar DW-21 scrapers and D8 crawlers as all parties concerned take advantage of fine summer weather.

a NEW WAY to fasten metal to wood or concrete!



with

RIVE-IT

structural steel and concrete walls of the new Jefferson Hospital extension in Philadelphia, Pennsylvania.

Architect: Vincent Kling. Contractor: Wark & Co. Drive-It Tools: F. H. Sparks and Co.





DRIVE-IT 320

BREAK-OPEN ACTION

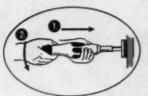
Snap open action results in the fastest operating tool on the market. Easiest method to load and eject cartridges under any condition.



Drive pins are Underwriters' Laboratories approved.



Controlled Power. First and only tool which requires but one standard power load regardless of penetration desired. No need to buy and stock various strength power loads.



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DETAILS

City.

Three-way Safety. Cannot be discharged accidentally, due to the push and turn firing sequence. This, plus the large, swivel safety pad, makes DRIVE-IT triple safe.

More fastenings per hour with this speedy way of loading and ejecting cartridges.

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the original POWDER-ACTUATED TOOL

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Canada: Ammo Power Tool Co., Ltd. 735 Broadway, Vancouver, B. C.

Please send FREE catalogue and literature. I want a FREE demonstration of DRIVE-IT.

Name

Street.

State

October 1954 — Construction METHODS and Equipment — Page 39

NYLON CORD TRUCK TIRES GIVE

-as proved by truckers' actual road experience



MORE RECAPS, "We recap our nylon cord tires at least twice," says H. D. Ayers, Ayers & Maddux, trucking firm, Phoenix, Ariz. "We're lucky to get 50% recaps with ordinary tires."



MORE MILEAGE. "We get 50% greater wear from nylon cords than from any other tire—they consistently save us money," says Carl Lizza, Lizza Bros., of Oyster Bay, L. I.



FEWER ROAD DELAYS. "Nylon cords have cut our road delays 25%," reports John Staffen, trucker of Tonawanda, N. Y. "They've cut our tire cost per mile nearly that much, too."

Du Pont and leading tire manufacturers put their skills together and perfected nylon cord tires after ten years' research and testing. Now truckers all over the country are reporting that nylon cords give more mileage, more recaps and fewer road delays. The result: much lower cost per mile.

Nylon has greater tensile strength, flex and abrasion resistance than any other fiber used in cords. Nylon cords absorb road shock and protect against bruise damage better than any other cords. Nylon cords take hottest road temperatures in stride, and they run cooler. Moisture seeping through cuts doesn't rot nylon.

Prove to yourself that nylon cord truck tires give substantially lower cost per mile. Ask your dealer about a set of nylon cord truck tires. (Du Pont makes nylon fibers, does not produce tires.)



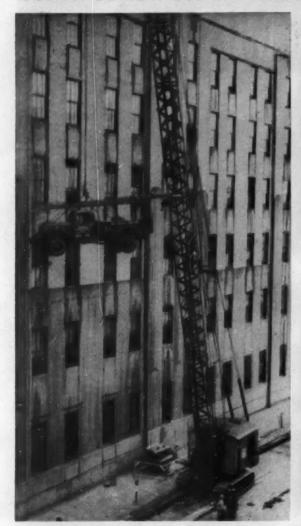
BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

LOWER COST PER MILE



TIRE COSTS CUT 32%—that was the experience with nylon cords of Rocky Mountain Service, truckers, St. George, Utah. Nylon cord tire (left) ran 297,000 miles, reports company president Norman Gubler, has just had fourth recap. The ordinary truck tire (right) is ready to be junked after traveling only 151,000 miles.

Construction News in Pictures ...



TRUCK LIFT — The New York Telephone Co. is adding a 7th story to its 6-story building in Buffalo. To remove debris from the roof, the contractor lifts his Dodge Power Wagon up with a crane, the crew loads it and then the crane picks up the loaded truck and returns it to street level.—Wide World photo.



CHIMNEY SURGERY — Workman of the American Steeplejack Co. fastens a strip of reinforcing wire mesh in chimney cavity 150 ft above ground for the Mills Company, Cleveland. Mesh is secured with threaded studs installed with a Ramset powder-actuated tool, will support patching concrete. Chimney is being overhauled and weatherproofed.



TRUCK DWARFS SHOVEL—A test load is heaped on Dart Model 40-1 rruck with Marion body. Chassis weighs 65,000 lb, body and hoist 35,000 lb; heaped capacity is 36 yd. Two of these big Darts, each powered by two 275-hp Buda diesels amidship, do hauling on the Iron Range—are loaded with 6-yd shovels.



DOUBLING UP — This unidentified operator is using all the capacity at his command. He hauls out of a cut and spreads on the fill with a 10-yd International B-91 scraper and the 3-yd Drott

Skid-Shovel on the front of his TD-18 crawler. Seems like a practical idea to apply available equipment to moderate size jobs, save on equipment investment.

(More news photos on page 44)













Construction News in Pictures ... Continued



RUNAWAY'S END — Everybody concerned is reticent about the mishap and it is not clear how this Northwest crawler got into an unsafe position to start rolling down a steep embankment in California. Operator stayed at controls, emerged unharmed.



WATCH YOUR TOES! — Corbetta Construction Co. had to drive some wood sheeting unexpectedly on a New York Thruway job. The crew rigged a 12x12 timber to the hoist line of its Bay City CraneMobile, handled the job easily.



TWO AT THE DOOR — Two Link-Belt Speeder truck cranes team up to place a section of a hangar door 60 feet high for a 600x250-ft bomber hangar at Castle AFB, Calif. Contractor for \$3,000,000 structure is T. C. Bateson Construction Co., Dallas.



ELEVATING THE "EL" — In New York, the Third Avenue elevated line is being raised 8 ft at one point to permit construction of an express highway underneath. Jacking "towers" of 14x14-in. timbers are temporary supports.—United Press photo



Leschen engineers tell you how to determine

Proper Use of Wire Rope with Wire Rope Core

First, what is it? It is a completely metallic rope made with a separate wire rope as a core, instead of the usual fiber core.

Why is it used? The steel core resists extreme pressure of individual strands on the core under very heavy loads. Here, a Red-Strand steel core rope substantially outlasts a fiber core rope. The extra steel in the core increases rope strength and safety by 7½%, compared with wire rope with fiber core. For occasional heavier loads this eliminates time and expense of changing sheaves, blocks and equipment to suit a bigger fiber core rope.

Red-Strand steel core rope answers the problem of crushing when rope is spooled in multiple layers on small diameter drums and winches—or when heavy loads are dragged or pulled. It also resists the damaging effects of excessive heat.

Where is it used? For extra strength and to resist heavy load pressure: on shovel and draglines—for drag, hoist, crowd and frequently boom ropes; on dredges, trench hoes, cranes and similar heavy duty equipment. To resist crushing: on bulldozers, scrapers, coal cutters, coal loaders, logging, arch and

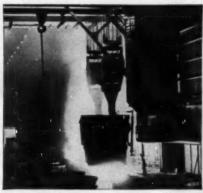
choker lines, and on rotary drilling lines. To resist excessive heat: on hot ladle cranes.

Which make should you use? Red-Strand steel core wire rope is highly recommended by its users for its higherthan-rated quality and longer-than-expected service. That saves money.

What's the next step? Talk to your Leschen distributor or Leschen field man. They're well qualified to answer your specific questions about Red-Strand steel core wire rope—or to help solve other wire rope problems. That means profit for you.



Severe stress, pressure and crushing occur on wire rope jobs like this and on rotary drilling drums and winches. On these jobs it pays to use higher-than-rated quality Hercules Red-Strand wire rope with wire rope core.



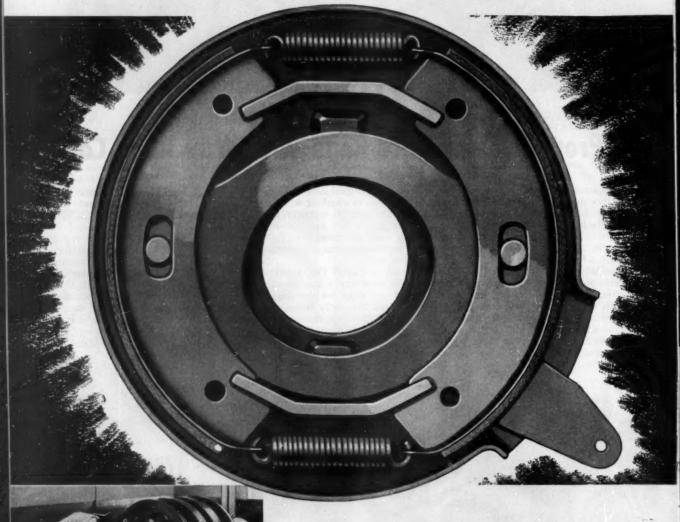
Where tons of molten steel are to be lifted by wire rope, great strength and resistance to intense heat are required. Here Hercules Flattened Strand wire rope with wire rope core delivers much longer-than-expected service.



Hercules Red-Strand wire rope made by
LESCHEN WIRE ROPE DIVISION
THE WATSON-STILLMAN COMPANY
(A SUBSIBIARY OF N. K. PORTER COMPANY, INC.)
34. Louis 12, Missouri

FROM THE ENGINEERING A REVOLUTIONARY NEW

For trucks, trailers, hoists, tractors, harvesters, cranes, buses,



Pre-proved in "Torture Tests"

Here's where TDA brakes are run through exhaustive tests on brake dynamometers in the world's most exacting "Torture Chamber." New materials and design features are con-

stantly being tested and developed for use in every type of product. Also, field tests are performed on all types of brake applications under every conceivable operating condition.

"KNOW-HOW" OF T.D.A. ALL-PURPOSE BRAKE!

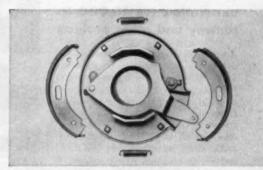
shovels, mixers, machinery, etc.

THIS BRAKE ALONE OFFERS YOU THESE 7 ADVANTAGES!

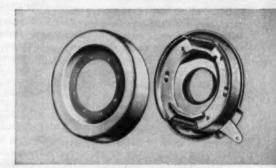
- **NEW SIMPLICITY!** Only 8 simple parts. Shoes and springs are completely interchangeable. For instance brake shoes can be "slapped in." Position of the shoes makes no difference . . . it's *impossible* to install them incorrectly. Simplifies stocking only 6 different parts required to completely replace the brake.
- 2 NO LUBRICATION REQUIRED! Maintenance reduced to the absolute minimum. No skilled help needed because it's "fool proof" to service and install. No inside adjustment necessary.
- 3 ENCLOSED DESIGN protects against dust, dirt, water, contamination. Prolongs brake life, reduces fire hazard.
- 4 LIGHTEST WEIGHT! This new development by TDA is in a class by itself. For example: the 13-inch drum size weighs only 40 lbs. as against 80 lbs. for an ordinary band brake!
- 5 LESS COST! These brakes use lightweight stamped steel shoes of new design as against ordinary heavy, more costly cast shoes. Wear longer with increased braking power.
- 6 NEW BALANCED-TYPE DESIGN! Exerts equal torque—in both directions. Balanced pressure makes both shoes do same amount of work. Brake linings have uniform wear pattern . . . constant, smooth performance.
- **7** FIVE TIMES LONGER BRAKE LINING WEAR, proved in actual road and work tests. This means less maintenance costs for operators... less inventory to stock. For instance: one manufacturer plans to use three of these new brakes to replace five types now employed.

Complete new literature now available on this revolutionary new brake. The result of 50 years of Timken-Detroit engineering experience . . . available in all sizes, for any type of work.

If somewhere in your business there is a special braking problem, big or small, we urge you to call on the ingenuity and vast knowledge of TDA engineers to solve it quickly – at low cost and without obligation. An inquiry on your company letterhead will receive immediate attention. Take advantage of this money-saving service now. Just write Timken-Detroit Brake Division, Ashtabula, Ohio.



Look how simple it is! No tricky assembly. Just remove two springs and lift out shoes. Anyone can put it together in minutes. No adjustment of brake required.



Here's the combination that gives this brake its outstanding superiority. Fewer parts to wear, to stock—longer life—less maintenance—lower cost.



\$80,000,000 construction for Plattsburg jet bomber base

Rugged yellow machines and engines help speed 3,882,500 cu. yds. of excavation for 10,000-ft. runway and other projects

Keeping on schedule is the order of the day, every working day, on the vital \$80,000,000 Air Force Base project, Plattsburg, N. Y. Construction involves clearing, leveling and paving a 10,000-ft. runway, taxiways and parking apron, relocating two miles of single-track railroad as well as building hangars, barracks, offices, jet fueling plant and water and sewage facilities. When the base is activated in the fall of 1955, a Strategic Air Command jet medium bomber wing of forty-five B-47s and twenty KC-97 tankers will be stationed here.

The historic site of Plattsburg Barracks, one of the oldest military installations in the United States, is the scene of hustling activity under the supervision of the Corps of Engineers. To maintain schedule (operating two 8-hour shifts per day), contractors are relying heavily on rugged yellow track and wheel-type tractors, scrapers, bulldozers, motor graders, engines and other specialized earthmovers — standardization that is paying off in all phases of the project.

Working on construction of the runway, taxiways and apron, which involves 3,410,000 yds. of excavation, Dutcher Construction Corporation, Queenstown, Md., has a fleet of fifteen DW21s, eighteen D8s and five No. 12s. Fill is 27 ft. at the deepest point. Hauls vary from 1800 ft. to 6100 ft. one way, with the DW21s averaging 18 cu. yds. of very sandy clay per load. A D4600 Engine powers a shovel piling brush for burning, while two D3400 Electric Sets provide electricity for night lighting.

On another phase of the project, laying 63,000 ft. of 38-in. drain pipe, Winkelman-Tompkins-Jones, Plattsburg, prime contractor, is using a D8, a PD4 Pipe Layer, a No. 6 Shovel, an HT4 Shovel and a D13000 powering an excavator. Working on the hangar area, C. D. Perry & Sons, also of Plattsburg, is employing seven D8s, four No. 80



Matched Caterpillar equipment saves seconds every cut—a D8 push-loads a high-speed, big-capacity DW21 in sandy clay.

Scrapers, one D7, two D4s and three DW20 Tractors with Scrapers. The Frederick Raff Co., Inc., is using two D8s and Scrapers and a D6.

Concerning performance, D. J. Dutcher, vice president of his outfit, says: "It has been my experience that Caterpillar* equipment is more dependable and stays on the job better than any other make. The complete line of Caterpillar-built machines offers me the right equipment for every job. Wherever I go, I find it backed up by good parts and service." Charles Wilber, superintendent for C. D. Perry & Sons, reports: "Because of their low maintenance cost, ease of operation, dependability, excellent service and parts facilities and ability to operate in any weather, I am very well satisfied with the performance of our Caterpillar units."

Standardizing on Cat-built equipment has other advantages, too. Many parts are interchangeable, cutting down time and parts inventory. Operators and machinists, familiar with one make of machinery, get more work out of it. And the nearby Caterpillar Dealer provides time-saving, money-saving one-stop service whenever needed. See him—ask him to show you how you'll profit more by standardizing on Caterpillar equipment.



Operator's clear view of blade and job in the No. 12 helps speed shaping and leveling fill, also building road.



Piling brush for burning, this shovel gets dependable, low-cost power from its honestly rated Cat* D4600 Engine.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

*Both Cat and Caterpillar are registered trademarks—®

Future Unlimited

ANOTHER OPTIMISTIC REPORT has given added confirmation to our earlier predictions that construction activity would remain high for some time. Most recent evidence is the result of a survey conducted among its members by the Associated General Contractors of America.

The greatest number of contractor respondents indicated that, during the next six months, they expect the volume of work will increase. Many others believed that there will be no drop-off from the present booming level. Relatively few predicted a downward trend. The predominant note of optimism prevailed through all categories of construction: building, highway and heavy.

The report follows in the wake of revised Department of Labor figures that make construction prospects for the rest of this year look brighter than ever. Contrary to its earlier forecast of a 2% decline in 1954, Labor indicated at mid-year that new evidence points to a whopping \$36 billion of construction to be put in place. Add \$15 billion to this for repair and maintenance, and you come out with a phenomenal \$51 billion total for the year. Construction, the country's largest single industry, currently accounts for nearly one-seventh of the gross national product.

The AGC survey (covering prospects for the next six months) and Labor's revised report (based partly on actual performance during the first part of this year, partly on forecasts for later months) reflect only the somewhat short-range view. Longer range, dealing with all of next year, is our own prediction that 1955 will see construction contract awards climb even higher—up some 6% (p 24). This will keep Labor's construction-put-in-place figures rising through next year and into 1956.

All this optimism has a solid base. President Eisenhower in his Economic Report, for example, cited the need for increased expenditures of more than \$9 billion annually for schools, hospitals and sanitary facilities to take care of present requirements and to keep pace with population growth. Steps are already being taken to implement his \$50 billion highway program.

Our own listing of future larger-size projects already in the definite planning stage shows a record backlog of \$77.3 billion—enough in itself to keep construction humming for some time to come.

This rosy over-all picture is not without its darker spots, of course. Labor unrest and inter-union rivalries threaten to slow the construction pace in certain sections of the country. Increased competition—far keener than in past years—will undoubtedly cause more grief as time goes on.

It can come as no surprise that nearly 90% of those surveyed by AGC are currently worried about competition and expect it to become even more severe. The reasons are obvious. There are more contractors. Many have upgraded themselves during the lush years and are now able to take on larger jobs or more smaller ones. Contractors have become more mobile; are undertaking projects farther away from their home bases. More productive machines and more efficient methods enable a contractor to complete his jobs faster, thus freeing him to bid on additional ones.

Undoubtedly the most disturbing reason cited in the AGC survey as a cause of members' concern about increased competition was "seeking work at dangerously low bids" in order to meet equipment expense and keep an organization intact. Oftentimes, this practice is self-correcting. Carried to an extreme, it will be self-liquidating for the practitioner. In either case, it can be brutal on fellow bidders.

That reckless bidding at money-losing prices has forced increased numbers of construction firms to the wall is evident from the latest Dun & Bradstreet figures. For the first eight months of this year, contractor failures are up 32%: a post-war high. The current trend, however, is downward.

So, as a whole, construction is in marvelous shape. There is plenty of work and the means to do it. The intelligent contractor—the one who knows his business; the one who keeps abreast of the present rapid advances in equipment and construction techniques; the one who deals fairly with his men, his clients and his competitors—that contractor cannot help but prosper.

A Report on Three Auctions...



What IS Used Equipment Worth?

CM&E WATCHED with intense interest three auctions of used earthmoving equipment during August—one in the East, one in the Middle West and one on the West Coast.

We were curious to see the results of these sales, because like contractors and dealers, we too, are seeking a good solution to the everincreasing used equipment problem. We'd like to know what current value is established by buyers of used equipment. One way to get this type of information is to check the results of used equipment auctions.

We honestly don't know if the public auction is the best answer to the used equipment problem. But By RALPH H. LEWIS, Associate Editor

we do know this: If you want to get rid of used equipment and take your chances on what it will bring—then just turn it over to a good reliable auctioneer, and he'll convert it into immediate cash for you. You might get more than you think the equipment is worth, and you might get a lot less than you expect; but you'll get rid of it regardless of its condition. It's risky, price-wise, but the sale result is sure.

We realize, when you attempt to compare prices on used equipment or even report prices at an auction, that there are many unknown factors to consider. For example: What was the age or serial number of the equipment? What attachments did it have? To what degree was the machine properly maintained? Under what conditions did the machine operate? How much overhaul does the machine need to put it in first-class condition? These factors, and probably more, should be known for a completely fair comparison of used equipment prices.

Even weather has a sharp bearing on prices. A warm day at an auction brings out a good crowd; a good crowd always brings more competitive bidding—resulting in higher selling prices.

So, keeping in mind the above

variables, take a look at the results of the three following auctions. We invite you to draw your own conclusions as to what used equipment is worth today.

Baltimore Auction

Alban Tractor Co., Caterpillar dealer in Baltimore, which had such a successful auction just a year ago (see CM&E, Oct., 1953) held another "What Am I Bid" event on August 30. Auctioneer Forke Brothers of Lincoln, Neb., offered 90 pieces of equipment and collected close to \$200,000 for it. The buyers, unlike those of last year, who were primarily dealers, this year were individuals in most cases. An accompanying table shows a price comparison of 1953 and 1954 sales at Baltimore. James G. Alban, president, discussing the results of the sale said: "We're satisfied that the public auction is the best way to move used equipment quick. We've got a clean yard and we know exactly where we stand financially. We sold what we had and didn't have to take in any additional used trade-in to do it."

Kansas City Auction

On August 16, Forke Brothers (who probably hold more used earthmoving equipment auctions than any other auctioneer in the country) disposed of 291 items of the Perry McGlone Construction Co. in Kansas City, Mo. The table gives a breakdown of the average prices received for equipment at the sale. An estimated 1,200 contractors and dealers attended. Average sale prices were generally higher than at the Baltimore auction. But perhaps this was because the equipment came from a contractor's spread.

San Francisco Auction

The biggest auction of them all was held in the Cow Palace in San Francisco, on August 23 by auctioneer Irwin Friedman. heavy construction and logging equipment, 695 pieces in all, worth \$2 million when new, brought \$900,000. The most unusual item sold at this "What Am I Bid" event was a much publicized 41/2-ton 8ft-dia. land-clearing ball (CM&E, Sept., 1950) which brought an amazing \$26,000. Most of the equipment originally came in from contractors, and was sold "as is." About 500 persons attended, with most of the buying being done by the larger construction and lumber

AT	BAL	TI	MO	RE		9

MAKE AND MODEL	Average Price 1953	Average Price 1954	Differ- ence	OTHER 1954 PRICES		
AC-HD5	83,237	\$3,600	+363	Cat DW-21813,500		
AC-HD7	1,950	1,200	-750	Cletrac 55 400		
AC-HD10	2,600	1,480	-1120	Cletrac FDE 300		
Cat-D8	2,000	3,484	+1484	LeTourn FP Scraper		
Cat D7	3,000	2,717	-283	18 yd 3,500		
Cat D6	2,650	3,255	+605	LeTourn F Scraper		
Cat D4	2,859	2,503	-356	14-18 yd 3,200		
Cat D2	2,023	1,772	-251	He'l Scraper 7 yd. 1,400		
Int. TD-9		2.984		LaPlant Choate 3,000		
Int. TD-14	2,500	2,438	-62	C-74 Scraper 12 yd.		
Int. TD-18	2,934	2,075	-859	Hough Payloader 950		
LeTourn Super C		2,010		Osgood Backhoe 200, 2000		
with scraper		1,884		Beyers 83 %-yd.		
LeTourn Super C		1,804		Shovel 1,550		
		400		Tournadoser 4,900		
less scraper		400				
				Motor Graders, all		

AT KANSAS CITY ...

AT SAN FRANCISCO ...

MAKE AND MODEL	Average Price	MAKE AND MODEL	Average Price
AC-HD5	\$4,700	AC-HD5	\$2,500
AC-HD14	1,800	AC-HD10	1,600
	5,212	AC-HD14	1,800
AC-HD19		AC-HD19	4,500
Cat D7	6,750	Cat D8	4,420
Cat D8	6,181	Cat D7	4,875
Cat 80 Scraper	6,250	Cat D4	1,450
LaPlant-Choate C-314		Cat D2	1,500
Scraper	5,100	Int TD-6	1,300
Cat DW10 with Scraper	6,100	Int TD-9	1,325
LaPlant TS-300 Motor	.,	Int TD-14	1,500
Scraper	7.000	Int TD-18	2,250
Roller, Compactors	934	Int TD-24	5,003
Cat N. 12 Motor Graders	927	Cat DW10 with Scraper	5,375
		Cat No. 13 Motor Graders	3,400
46-49 models	5,700	LeTourn Super C with Scraper	3,750
Northwest 25 Dragline	6,100	LeTourn W Carryall	2,750
Northwest 95 Dragline	30,500	Link-Belt LS-80 Shovel	4,625
Koehring 25 Dragline	21,500	Osgood 200 Shovel	5,500

HOW THEY COMPARED

MAKE AND MODEL	BALTIMORE Average Price	KANSAS CITY Average Price	SAN FRANCISCO Average Price
AC-HDS	\$3,600	84,700	\$2,500
AC-HD10	1,480		1,600
AC-HD14		1,800	1,800
AC-HD19		5,212	4,500
Cat D8	3,484	6,181	4,420
Cat D7	2,717	6,750	4,875
Cat D4	2,503		1,450
Cat D2	1,772		1,500
Int TD-9	2,984		1,325
Int TD-14	1,884		1,500
Int TD-18	2,438		2,250
Cat DW10 with Scraper	2,075	6,100	5,375
Cat No. 12 M. Grader		5,700	3,400
Osgood 200 Shovel			5,500
LeTourn. Super C with Scraper	2,000		3,750

companies. An accompanying table gives a partial breakdown of the average prices received. Another table compares average prices at the auctions.

There you have it. So far as we know, this is the first time such figures representing a cross-section of the country have been published. The selling price was put there by the buyer, not by the dealer nor by a prospective buyer of new equipment who was bargaining

with a trade-in. Most auctions are honest and above board today, with the bidders protected from buybacks or deals. The bidder often has a wonderful opportunity to pick up a bargain at these auctions.

Used equipment auctions are becoming rather commonplace throughout the country—an indication that both contractors and dealers feel that is a good way to dispose of used equipment.



DRILLING MACHINERY mounted on crane cab rapidly raises and drops heavy drophammer on sand-drain mandrel. Developed by George M. Brewster & Son of Bogota, N. J., the unique pile driver requires fewer men and operates without air or steam.

Contractor's Drop-Hammer Rig Hits Hard and Often

CONTRACTOR INGENUITY at its best has turned in another first for the construction industry. This time it is a mechanically operated drophammer that strikes a pile 50 times a minute and releases nearly 25,000 ft-lb of energy with every blow.

Developed by George M. Brewster & Son of Bogota, N. J., the unique rig requires fewer men than conventional pile drivers, and has the added advantage of operating without compressors, steam equip-

ment, or hose lines.

The key to the unit is a modified spudding mechanism from a Bucyrus-Erie 50-T blast-hole drill. Mounted on the cab of a Manitowoc 3000 crane, an oscillating spudding arm raises and drops a 7,500-lb ram through fast 40-in. cycles. The combination of fast ramming, exceptionally high energy, smooth operation, and cheap mechanical power produces top driving effi-

Brewster has already built two of the machines, and he is testing both of them on sand-drain work at the New Jersey approaches to the Delaware River suspension bridge near Gloucester. The job requires about 11/2-milion ft of 20to 45-ft sand drains for stabilizing

a swamp.

Drop-Hammer Is Faster

Seven rigs are driving drains on the site, and all are Manitowocs with 60-ft booms and 80-ft leads. The five conventional rigs drive the 20-in. sand-drain mandrel with heavy double-acting hammers supplied with air from two Ingersoll-Rand 600-cfm compressors. Now that the operators on the new rigs are getting more experienced, the drop-hammers are beating the other rigs by driving more than 250-ft of sand drains per hr.

Power for operating the spudding mechanism on top of the cab is transmitted from the crane's engine through multiple V-belts. The mechanism's gear assembly turns twin spudding gears mounted concentrically on independent shafts. A crank pin, supported by both gears, operates like a connecting rod in a piston to oscillate a spudding arm up and down. The cable that raises and drops the ram is reeved over a special sheave on top of the leads, down through the sheave on the oscillating end of the spudding arm, back around a heel sheave, and down to the drum. Each cycle of the arm raises and drops the ram 40 in., applying heavy blows on the pile.

Brewster's engineers visualized the high-speed drop-hammer rig early in May when they first began to plan the big sand-drain job. They met often with engineers of both Bucyrus-Erie and Manitowoc to work out the design. As soon as the plans were drawn up, Brewster's men began modifying the crane.

One of the biggest problems was transmitting power from the Buda diesel up to the spudding mechanism on top of the cab. The main drive shaft had to be extended and connected to the gear assembly above with multiple V-belts.

To raise the sand skip, a third drum had to be fitted into the base of the boom and powered off the hoist drum. The two regular drums handle the ram and the mandrel. On conventional pile-driving work, this third drum will probably be used to snake piles into the leads.

Other important alterations were the rubber shock absorber and rubber-insulated sheave at the top of the leads. Besides producing an instantaneous pickup on the upstroke, they protect the crane and driving mechanism from shock and vibration.

Little Energy Loss

At the base of the leads, two air jacks were installed to stabilize the rig during driving and to act as compression blocks when the mandrel is pulled out. A small compressor mounted inside the cab supplies air for the jacks and also for helping to force the mandrel out of the ground.

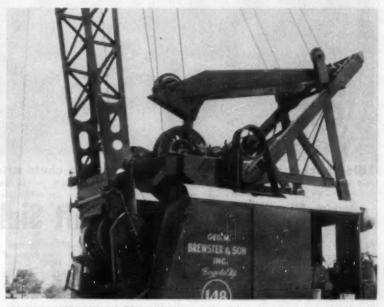
Because the dead weight of the ram is not always acting on the mandrel as it is with a conventional rig, weights are hung along the sides of the leads to help the mandrel sink as soon as the soft layer is encountered. On the second rig this method was improved by wrapping the top of the mandrel with lead collars.

Brewster is very enthusiastic about the future of his new machines. They have already proved themselves on sand-drain work, and will probably work as well on other types of piles. One of the biggest advantages is the comparatively small energy loss of the free-falling ram.

Most of the credit for visualizing and developing the rig goes to three of Brewster's top superintendents, E. Hoy, R. Dentz, and K. Sterling. H. Thornburg of Bucyrus-Erie and E. Nichols of Manitowoc cooperated with the contractor on the design.



DROP-HAMMER IN LEADS of contractor-developed pile driver strikes 50 times a minute and releases nearly 25,000 ft-lb of energy with every blow. Oscillating spudding arm mounted above crane cab smoothly operates 7,500-lb ram through 40-in. stroke.



POWER FOR SPUDDING MECHANISM is transmitted from crane's engine through multiple V-belts. A third drum had to be mounted at base of boom to raise skip on sand-drain work. On conventional pile driving, this drum will be used to snake piles into the leads.



Tilted bucket spills chilled muck down loading chute after . . .

Freezing Makes Shaft Sinking Easier

FROZEN GROUND impedes progress on most excavating jobs. But here is an instance where the artificial freezing of wet ground makes a job more economical.

CM&E readers will recall the article in the November 1953 issue

relating how Winston Bros. Company drilled a ring of 12-in. holes 720 ft deep, which were to be used as cold brine carriers for freezing the extremely wet material to be excavated in the sinking of a 16-ft shaft for a salt mine. The owner is

the Canadian Rock Salt Co., Ltd., and the site is at Ojibway, Ont., near Windsor.

The freezing operation was successful, and Winston now is working around the clock, seven days a week, excavating and lining the



BUCKET TILTS and muck begins to flow down into Euclid end-dump which makes short haul to fill on a new causeway. Horizontal safety "gate" covers open shaft during dumping.



BALL ON CHAIN at bottom slips behind slot in chute, causes bucket to fall forward and dump, as it is lowered by hoist operator. Note square "crosshead" retained above bucket during dump



BITE OF COLD ROCK is taken from bottom of shaft by Riddell mucker, controlled from station inside lined section overhead. Excavated dia is 16 ft. Mucking crew of four handles job easily.



LOADED BUCKET begins its trip to the surface. It will pick up crosshead inside finished section. Frozen shaft is a chilly place, but men dress warmly, keep well, keep dry, have no colds.

sides with concrete as the hole goes ever deeper.

"Closure" by freezing of the 32-ft circle required about 2 mo. Then several more weeks were required to freeze the material to the center, making the future shaft a mammoth icicle loaded with generous helpings of rock, sand, gravel and clay.

The permanent headframe for the mine—fabricated and erected by the Canadian Bridge Co.—is used to handle men, muck and materials. All work in the shaft is entirely dry. Ice-cold rock and chunks of ice come up with bucket-loads of muck. The only liquid in the hole is a small puddle of liquid used to cool the Copco drills and

their Timken steel and bits.

Compressed air lines inside the shaft are kept from freezing by the regulated addition of Tanner Gas, which serves as an anti-freeze for air. Drilling is in 3-ft rounds, "benched" so that the muck material in one-half of the hole helps to absorb some of the blasting shock and lessen jarring of the



LINING FORMS are six steel sections, 28 ft long, that lock together inside shaft and can be plumbed vertically with integral jacks.

Each section has four doors for pouring. Spare muck kettle and concrete bucket wait their turn in background.



FORM BULKHEAD SEGMENTS are cleaned and oiled for the next pour. These are placed on the bottom, have a slot to receive rubber water stop. Good organization keeps shaft work rolling.



RING OF ICE 4 ft deep circles shaft on the surface. White hump is one of the drilled-well pipes circulating cold brine. Thermocouple readings make balanced freezing possible.



BRINE CIRCULATING PUMPS and receivers outside compressor house. Canadian Ice Machine Co, equipment and York compressors have daily capacity of 220 tons, operate continuously with only a little attention.

brine pipes embedded solidly around the excavation. It is expected that full-face drilling and blasting will prevail beyond the 720-ft mark, where dry material is anticipated.

Each blast in rock uses approximately 150 lb of 40% Canadian Industries, Ltd., Forcite, with delays ranging from 0 to No. 10, and produces nicely shattered material that mucks out easily with a ½-yd job-built Riddell mucker. The mucker is operated from suspended rails near the bottom of the shaft by two Gardner-Denver HM tuggers and a G-D travel motor, Model MBH.

The mucker loads into a 2¼-yd bucket suspended from the end of a 1¾-in. hoist cable running over one of the headframe sheaves and to a 450-hp Vulcan mine hoist. As the bucket descends and ascends inside the shaft, it is kept centered by a "crosshead" frame that follows the guide rails along the sides



PERMANENT HEADFRAME is 155 ft high, has two 12-ft sheaves. Top of dump chute is raised to let bücket skip and cable pass.



INGERSOLL-RAND TUGGERS power hoisting and travel cables for materials-handling hoist and overhead rail carriage—supported by the headframe and used to service the shaft.



HORIZONTAL GATE, rolling on steel rails and actuated by an air ram, is moved over the open shaft as soon as the bucket is brought above the surface. Here, equipment is pre-loaded, ready for quick transfer to the skip and delivery down the hole when wanted.

of the shaft's completed sections.

When the bucket nears the working area at the bottom, the crosshead is held automatically, and the bucket continues alone to the bottom of the hole. On the way up, the loaded bucket picks up the crosshead again and is guided by it to the dumping chute above ground.

Excavation continues for 28 ft. Then reinforcing steel is set and tied and forms placed for the concrete lining. Steel is 1-in., %-in. and ¾-in. bars—placed vertically and horizontally—with spacings varied according to rock formations around the shaft. Loops of reinforcing steel are left extending beneath the forms so that the next round of reinforcing can be looped through them to help keep the lining integral. Anchor bolts set into the concrete support shaft timbering which follows the pour.

Forms are 28-ft-long steel sections—six equal arcs that lock together along their edges to form

the circular dimension of the permanent shaft. The sections are sealed at the bottom by special bulkhead segments that rest on the muck in the bottom of the shaft. Each section can be "hung" from the preceding section of concrete lining to obtain a true vertical setting, and each section has adjusting bolts for that purpose. The six pieces are kept separated slightly until aligned, and then their fitted edges are hinged together snugly by drift pins.

Concrete is placed behind the forms through succeeding doors as the cavity fills up. There are four doors to each form section. Special pouring chutes are employed to make a permanent closure between the new concrete and the older cured wall lining above. Extra precautions are taken to prevent water seepage through joints. This is accomplished with a water stop—a wide, endless rubber ring made by the Gutta-Percha & Rub-

ber Co., Toronto—set into slots in the bulkhead at the bottom of the form.

The concrete lining varies in thickness from 16 to 30 in., depending upon soils encountered. Concrete side bearers are cast outward into firm rock at intervals. The mix goes down the shaft in a Blaw-Knox bottom-dump bucket and is placed behind the forms with a Gar-Bro elephant trunk. Ingersoll-Rand vibrators are operated through the doors in the forms.

Concrete is 3½- to 4-in. slump; largest aggregates limited to 1½ in. All of it is transit-mixed, supplied by Ryan Builders Supplies, Ltd., a local concern that is giving superb service. Darex additives are used, but the proportioning is left to the supplier who has to guarantee a mix that will test 3,000 lb at 28 days. Samples of each pour are tested. Approximately 100 yd of concrete are used for each 28-ft pour. (Continued on next page)

A typical cycle for completion of a 28-ft wall section works out approximately as follows:

- 95 hr for excavation
- 3 hr to set bulkhead ring.
- 12 hr to set steel and prepare for forms
- 9 hr to set forms
- 9 hr to pour concrete
- 12 hr to place timber and guides
- 8 hr to strip forms
- 6 hr to get water and air lines and equipment ready for excavating.

Organization of the project is so good that the job has been shut down less than 24 hr since excavation began. In mid-September the shaft was down over 500 ft and on schedule. Although work is going on all the time on some phase of the cycle, the entire job is run by 44 construction workers. Trained Canadian crews enjoy excellent working conditions under the pay scales, and labor turnover is nil.

Freezing wet ground and then excavating in the dry appears to be a simple solution in a tough situation. Although freezing is not new, there are few contractors who have used the technique. Winston engineers, fortified by experience on several previous freezing projects, will tell you that it requires

considerable know-how and constant attention to detail to achieve and maintain balanced freezing to avoid wrecking the project. Freezing brings an extra dividend in that it seals off any gases that might be encountered.

Winston Bros. Co. is working under a negotiated contract with Canadian Rock Salt Co. Charlie Gail is project manager, Jim Tripp is project engineer and assistant project manager, Paul O'Neal is general superintendent and Monte Richards is office manager. For Canadian Rock Salt, Martin O'Day is mine manager, and Bill Rice is mine superintendent for this operation.

A New Switch on an Old Problem

SWITCH BOX HOLES are cut accurately and quickly in drywalls with a new tool recently announced by Hartmeister Mfg., Inc., 2020 W. Barberry Pl., Denver, Colo. They claim that more than 1,000 holes can be cut in an 8-hr day—reducing hole-cutting time as much as 80%.

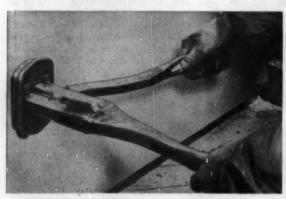
The tool, using cutting dies, will cut openings in %-, 1/3-, or %-in. drywall that fit single, double or multiple switch boxes. It will not break away excess wall, won't split the back side of the sheet and will not damage the facing. The completed cut leaves 1/32-in. clearance around the box.

Three steps are involved to operate the tool: First the male cutter is snapped into the switch box before the sheet is nailed in place. Next, a hole saw is used to cut a hole at the center of the switch box. Then the male and female cutters are locked automatically through the hole, the cutter handles squeezed together and the hole is cut.

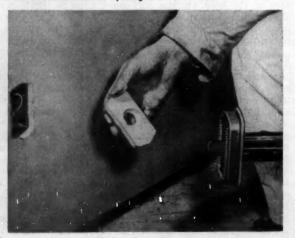
Price for the unit is \$24.95.



MALE CUTTER is attached to switch box before sheet is nailed up. Then a hole saw cuts an opening in center of box.



MALE AND FEMALE CUTTERS are locked automatically through the hole, the cutter handles squeezed, and the hole is made.



DIFFERENT DIES will cut openings in 1/2-, 1/3- or 1/8-in. walls leaving a 1/32-in. opening around the switch box.



REPAIR DEPOT for Corps of Engineers equipment sprawls over huge area near Yokohama, Japan. One of the largest installations of its

kind, the depot restores to serviceable condition practically all kinds of equipment sent in from the Far East area.

Army Operates Huge Repair Depot in Japan

MORE EQUIPMENT operated by the Army's Corps of Engineers is repaired, rebuilt, or restored to serviceable condition at the Engineer Depot in Yokohama, Japan, than at any other place in the world.

Manned almost exclusively by Japanese workers, the sprawling depot handles unserviceable equipment from all parts of the Far East. Despite the language barrier, Americans and Japanese are working together to keep needed equipment on the line.

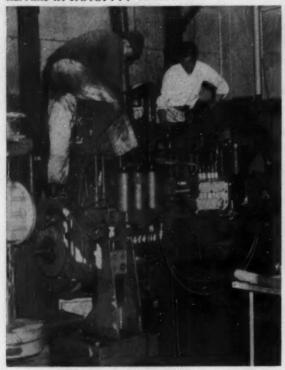
Japanese draftsmen, welders, machinists, mechanics, painters, electricians, and repair specialists, supervised by Army Corps of Engineer and American civilian personnel, are saving the American taxpayer countless thousands of dollars every day.

The Yokohama Engineer Depot is commanded by Colonel Henry J. Hoeffer.

(More photos on next page)



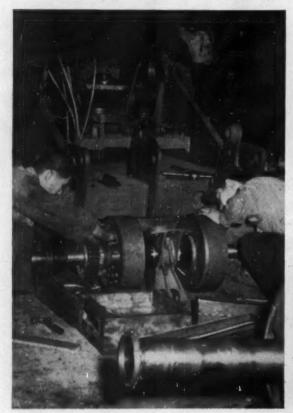
ELEVEN CRAWLER TRACTORS are assembled by using standard factory-type production-line methods. Press in right foreground handles track rollers and bushings.



DIESEL ENGINE for Caterpillar tractor is tested by Japanese workmen before it is sent back to the line.



DIESEL TRACTOR is dismantled on its trailer. After being cleaned and inspected it will be placed in the shops for reassembly.



MAIN DRIVE SHAFT for power shovel is taken apart for repairing. All parts are inspected to assure that serviceable units are salvaged.



GRADER CIRCLE undergoes grinding operation. Japanese workers do all the skilled and semi-skilled work at the depot. Technical and administrative supervision is furnished by the Army.



FRAMES for crawler tractors are processed by welders. Mechanical equipment is rebuilt at less than 30 per cent of replacement cost.



IN YOUR DIESEL ENGINE, the ratio of air consumption to fuel consumption is 12,500 to 1. Sure, the air is free for the taking. But if it's not the right air—if it's dirty, restricted in its flow, or of the wrong temperature—that free air can cost you plenty in increased fuel consumption, excessive engine wear and loss of power.

To help combat these unnecessary items of operating expense, Cummins Engine Co.'s service bulletin No. 16 makes the following recommendations. They apply to any make or type of internal combustion engine—gasoline or diesel, two- or four-cycle. All internal combustion engines use air, and all may be damaged in the same way by its misuse.

Dirt is an engine's worst enemy. Air contains small particles of abrasive material, which are always present, but not always visible. There are few applications where the air is clean enough to be used as-is in your engine. On some jobs the air is so dirty that it will ruin an engine in a few hours—unless you take proper measures to clean the air.

Better Air Ups Engine Life and Output

Recently, a special test was run under controlled conditions to determine just how long an engine would run with dirty intake air. During the test a total of ½ lb of dirt (about one handful) was fed directly into the air intake of an engine at a uniform rate over a 150-hr period. On a dusty job this much dirt easily could be drawn into the engine through a ½-in. hole in the piping from the air cleaner to the engine.

At the end of the 150-hr test, the engine was using ten times as much lubricating oil as at the beginning. The engine was disassembled, and inspection showed it was worn far worse than most engines of the same model after 8,000 to 10,000 hr operations with properly filtered or clean air.

How to Get Clean Air

• Keep Intake Air System Efficient by regular cleaning. The air cleaner will take dirt from the air until it gets loaded; then it restricts air flow and lets the dirt go through. The maintenance mechanic must clean the system, following the check-off shown below.

Remove dirt from the pre-cleaner (if used) and from the air cleaner cup as often as the job requires. Never allow more than ½ in. of dirt accumulation in the oil cup. Keep oil in the cup because the oil wash is the only way to keep the cleaner screens effective.

Occasionally it will be necessary to steam clean the air cleaner main body screens or remove the cleaner and wash in solvent. When steam cleaning, dis-

Air Cleaner Maintenance

Check-Off Sheet for Engines Operating in Off-Highway Equipment*

Daily, or More Often if Necessary:

Clean pre-cleaner.

Change oil in air cleaner cup. (Never allow more than ½-in.

dirt accumulation in bottom of cup.)

Change oil in oil-bath crankcase breather.

Check for air leaks due to:

Punctured hose connections.

Cracks in welded seams of air cleaner and piping.

Deformed oil cup gasket.

Loose supercharger inlet connection.

Split soldered joints in air cleaner housing.

Check for air restrictions due to:

Kinked or mashed flexible hose lines.

Rain shield squashed down to restrict air inlet.

Dents or bends in metal tubing.

Mechanized damage to air cleaner.

Every 75-Hr Operation:

Clean removable air cleaner tray. Check tightness of: All air cleaner hose clamps and connections.

Air cleaner mounting bracket cap screws.

Air cleaner bands. (Upper band must not contact bottom of cleaner outlet connection.)

Every 300-Hr Operation:

Check the air inlet restriction.

If restriction exceeds 18 in. of water, steam clean the air cleaner non-removable screens.

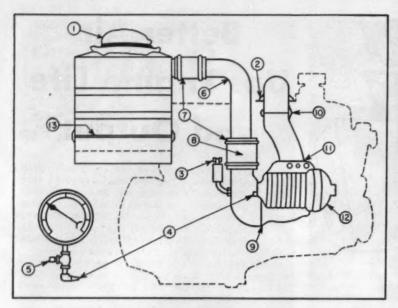
Wash interior walls of air cleaner center tube and snarkel. Steam clean crankcase breather.

Every 600-Hr Operation:

Pressure check the air cleaning system for leaks.

Replace all flexible has connections if pressure check shows them to be defective.

* Under extremely dusty conditions, a pre-cleaner and/or after-cleaner should be used in addition to the conventional air cleaner.



Pressure Checking Air Cleaning System for Leaks

- Remove rain shield, and clamp piece of inner tube tightly over air cleaner inlet.
- Install sheet metal plate between intake manifold and air inlet connection.
- 3. Plug breather line.
- Remove pipe plug from supercharger inlet connection and install pressure gage in opening.
- Pressurize system to 2 psi through air valve in Y-connection. Use standard air compressor or tire pump.
- 6. Check for air leaks along pipe seams.
- Look for faulty rubber hose connections or loose hose clamps.

- 8. Pipes must have seamless cuffs to prevent damage to rubber hose connections.
- 9. Check for and correct leaking gasket.
- 10. Replace "O" ring if leaking.
- 11. Check for loose capscrews or gasket leaks.
- Rapid pressure drop may be due to faulty supercharger seals.
- Leaks at this point are not important except for testing. Seal with rubber tape (if the "O" ring does not seal) during the pressure check only.

connect the outlet pipe and direct the steam jet from the outlet side of the cleaner so the dirt will be washed out in the opposite direction of air flow.

Remove the tray screen just above the oil cup and wash it in solvent as often as required. If lint has collected, it may be necessary to single it off; be careful not to use a flame that is hot enough to melt the tinned coating.

• Make Sure All of the Air goes through the air cleaner. See that piping and connections have no cracks or holes through which intake air can by-pass the cleaner. A visual check may disclose some leaks, but a pressure test of the air cleaning system is more positive. It is detailed in the accompanying sketch.

The testing procedure can be applied to all Cummins engines equipped with an oil-bath-type air cleaner. On some engines, it may

be necessary to drill and tap a 1/8-in. pipe tap hole in the air inlet casting in order to take the pressure gage. Be sure to install a pipe plug in this hole after the pressure test is completed. The same pipe tap hole used for pressure checking also can be used to install a manometer for checking air inlet restriction.

- Get the Cleanest Air that is available. The dust concentration 3 or 4 ft above the engine hood is usually only a fraction as severe as the concentration at or below hood level. So on off-highway applications, it is often necessary to provide an extension at the top of the air cleaner so the air intake will not be in the main dust stream. Be sure the diameter of the extension tube or snorkel is no smaller than that of the air cleaner inlet flange.
- Use Special Cleaning Equipment where required. There are many

variations of air cleaning systems. For example, a pre-cleaner is sometimes used on jobs where it is otherwise impossible to remove dirt from the conventional cleaner often enough to keep the cleaner efficient. Although a pre-cleaner decreases the over-all efficiency of the air-cleaning systems, its use is sometimes necessary in order to increase the time between cleaning periods to a reasonable figure.

The use of a pre-screen has proved quite successful in catching lint (such as dandelions, grain chaff, etc.) before it enters the air cleaner. The pre-screen is important: if lint is allowed to collect on the screens of the main air cleaner, it is extremely difficult to remove, since lint will not dissolve in solvent.

• How to Get Enough Air. Black exhaust smoke coming from an engine is an indication that it is not receiving enough air to burn all of its fuel. Not all of this unburned fuel goes out the exhaust stack; some of it washes down cylinder walls to dilute the lubricating oil, or it changes to carbon and causes stuck piston rings and clogs.



injector spray holes. Fuel wasted can often run as high as 15% of total fuel cost, so make these checks to insure that your engine is getting enough air.

 Check Exhaust Back Pressure. A muffler that is too small, damaged or not properly designed may cause high exhaust back pressure.
 Avoid sharp bends in exhaust piping.

Check the exhaust back pressure with a manometer at the exhaust manifold outlet flange. The back pressure, at maximum governed rpm, should not exceed 1 in. of mercury on natural-aspirated engines or 1½ in. on supercharged engines.

• Check Air Inlet Restriction. Take a manometer reading at the supercharger inlet connection or at the intake manifold on natural-aspi-



rated engines. If the restriction is low, 7 to 14 in. of water at maximum governed speed, the engine is getting plenty of air. If the restriction exceeds 18 in. of water, the engine is not getting enough air. To correct, proceed as follows:

A. Clean the air cleaner screens as described before.

B. Check for sharp bends in air inlet piping. Sharp bends restrict air flow.

- C. Check to be sure the inside diameter of the piping between the cleaner and the engine, or of the extension or snorkel above the air cleaner, is no smaller than the flange connections of the air cleaner.
- D. Repair or replace any dented or mashed air cleaner piping, rain shield or air cleaner.

After all corrective measures have been taken, re-check the air inlet restriction.

How to Get the Right Temperature

You can save fuel, repair and downtime costs by controlling the temperature of the intake air during periods of extremely cold or hot weather. The ideal intake temperature for diesel engines is between 60 and 90 deg F. Intake air temperatures too far above 90 deg are undesirable: engine horsepower falls about 1% for each 10 deg rise above this figure.

An engine rated at 250 hp, for example, will develop only 240 hp when the intake air temperature is 130 deg with the same fuel delivery. Since air inside the hood is heated by the radiator, cylinder block and exhaust manifold, the temperature of the air going into the engine—especially during the summer months—may be higher than 130.

Intake air that is too cold increases operating costs, too. A drop of 60 deg intake air temperature results in a 160-deg drop in compression temperature.

Low compression temperatures may cause:

- A. Failure to start.
- B. Delay in ignition of the fuel and, in turn, detonation or fuel knock, and higher peak combustion pressures.
- C. Irregular combustion and a rough-running engine, particularly at idling speeds.
- D. Possible periodic failure to ignite the fuel charge with resultant dilution, lubrication problems, ring troubles, etc.

In addition, cold air causes loss in efficiency of the air cleaning because of thickening of the oil in the cleaner. Air rushing through the air cleaner oil cup must form an oil spray. This spray collects on the strainer baffles and screens, then drips back to the oil cup carrying the dirt with it. If the oil is too thick, this action is hindered.

Some equipment manufacturers and operators have already recognized the advantage of controlling the temperature of the intake air to the engine. Accordingly, they have designed methods of drawing intake air from outside the hood during the summer months and from under the hood during the winter months. Many other similar arrangements can be worked out on the job, provided the following points are considered:

- A. Air flow must not be restricted.
- B. The intake air must always go through the air cleaner.
- C. The capacity of the heating or cooling arrangement should be such as to provide the desired air intake temperature of 60 to 90 deg F.

Salamanders Can Be a Fire Hazard

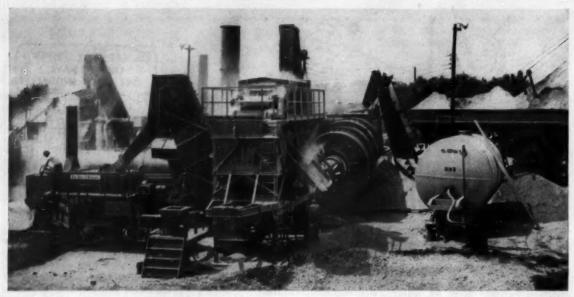
SALAMANDER SEASON is here so remember to remind men that improper use, neglect or lack of understanding of the hazards involved in using a salamander can bring disaster. More than one fire on construction jobs has been directly traced to a salamander.

Here are a couple of items to remember when you use a salamander. Do you have fire-extinguishing equipment near the salamander? If your salamander should overheat would the radiation ignite any combustible materials near by? Have you insulated the salamander properly from the floor or other combustible bases?

Have you provided watchman service or supervision to check on the units?

If you are using oil burning salamanders, you not only have a fire hazard but also a gas hazard. Incomplete combustion of the oils used in salamanders will produce carbon monoxide, a silent deadly killer.

If it's an oil burner, don't light it if the damper is closed. Don't move it when it's burning. Spilled oil may ignite. Don't relight immediately after extinguishing. Give it a chance to cool. Never look down the stack when lighting. It may be your last look.



CONTINUOUS-MIX ASPHALT PLANT produces up to 200 tons of Perkway. An enlarged version of Barber-Greene's Model 848, the blacktop per hr at the southern end of New Jersey's Garden State plant has a 9-ft-dia dryer and a 4x12 screening unit.

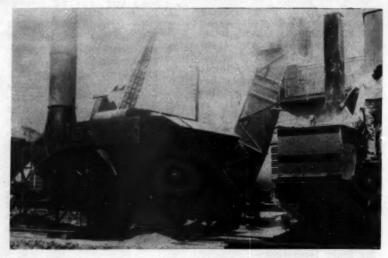
Hot-Mix Plant Turns Out 200 Tons an Hour

A KING-SIZE VERSION of Barber-Greene's Model 848 continuous-mix asphalt plant is producing between 180 and 200 tons of blacktop per hr to complete the southern end of New Jersey's Garden State Parkway

Tioga Construction Co. of Lancaster, Pa., paving subcontractor to George Brewster & Son of Bogota, N. J., is working 12 hr a day and six days a week on the 21-mi stretch of superhighway near Cape May. The job requires about 140,000 tons of mix for the 6-in.-thick base of bituminous-stabilized sand and gravel and the 1½-in. thick surface course of bituminous concrete.

Tioga is producing all of the mix with two plants, a standard Barber-Greene 848 and the new king-size model. Working side by side in a pit about 3 mi from the Parkway, the two plants are turning out a total of nearly 300 tons per hr.

In many ways the big plant and the 848 are identical. Elevators and pugmill, for instance, are the same, except that their speeds have been stepped up. The dryer, however,



DUST COLLECTOR has 16 cyclone units, double the number on the Model 848. Tioga Construction Co. is producing 140,000 tons of mix for the 6-in. base course of bituminous stabilized sand and gravel and the $1\frac{1}{2}$ -in. surface course of bituminous concrete.

is brand new. With a 9-ft dia and a 20-ft length, the big drum can process 200 tons of aggregate per hr. The dust collector has 16 cyclone units, double the number in the standard plant. For better gradation control, a 4x12 Symons 3½-deck horizontal screening unit has been installed.

All sand and gravel for the stabilized base course is obtained right in the plant's backyard. Sand is usually found in the surface layers of the pit, and gravel is obtained farther down. Two draglines load dump trucks which haul the short distance to the plant.

Surrounded by stockpiles, a

Manitowoc crane with a 2-yd Owen clamshell bucket easily charges the two sets of cold-feed bins. One bin of each set holds sand and the other gravel. Reciprocating plate feeders move the gravel directly to the cold elevator and transfer sand to a belt conveyor that terminates at the elevator. Gates on the bins are adjusted to control the proportioning. The rate at which the aggregates are fed to the elevator can also be controlled by varying the speed of the plate feeders and the transfer conveyor.

Except for electric motors on the feeders, cold conveyor and screens, (Continued on page 66)



INTERNATIONAL PAYSCRAPERS and crawlers help contractors carve 88 mile roadway through mountainous terrain.

With the opening of the new West Virginia Turnpike, travel distance between Charleston and Princeton shrinks from 110 to 88 miles, a 20% reduction in mileage over a two-lane road that makes driving through the mountains faster and far safer.

While not as long as some of the other new Turnpikes, this \$96,000,000 road-building venture was a rugged test for contractors from the outset with original estimates of 25,000,000 cubic yards of earthmoving increased by mountain slides that required moving more than 500,-000 yards of dirt for each mile of highway built in many locations.

This mountainous setting provided contractors with more concrete evidence that INTER-NATIONAL tractors—both rubbertired and crawler-really pay off big when the chips are down . . . when greater power, payload moving capacity and maneuverability are needed in the tight spots.

It takes just 10 seconds to get the low-down on International's greater earthmoving earning power. Simply call your International Industrial Distributor today and he'll demonstrate any of the great INTERNATIONAL tractors with matched equipment right on your job tomorrow.

INTERNATIONAL HARVESTER COMPANY CHICAGO 1, ILLINOIS

LI ON THE SUPER HIGHWAYS Carving out the West Virginia Turnpike



A MOUNTAIN SLIDEnearly doubled the excavation work of the L. S. Coleman Company, St. Albans, West Virginia, in Kanawha County, but two INTERNATIONAL TD-24s and two INTERNATIONAL 2T-75's helped remove the slide in short order.



TITAN IN A TUNNEL. Bates and Rogers Construction Corp., Chicago, find the INTERNA TIONAL TD-18A crawler and 3 cu. yd. DROTT Skid-Shovel a great all-around performer in constructing half-mile tunnel between Standard and Fairfield, West Virginia.



LATROBE LIKES 'EM. "We put our 3 TD-24s on the tough jobs because of the extra power and speed, their all-around efficiency and stamina," says John Sobotta, grade foreman for Latrobe Road Construction Co., Latrobe, Penn., contractors on 3,000,000 cubic yards of excavation and embankment in Raleigh County.



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We offer expert REPAIR SERVICE on all makes, all types of instruments

BIG HOT-MIX PLANT . . . Continued from page 64



BOTH PLANTS ARE SUPPLIED with aggregate from the same stockpiles. A Manitowoc crane charges four bins, two for each plant. Plate feeders move the material to the elevators.



BITUMINOUS STABILIZED SAND and gravel mix is laid with a Barber-Greene finisher.

Two more 2-in. lifts will be placed on top, followed by 1½ in. of bituminous concrete.

the plant is powered by diesel en-

Asphalt is hauled in tank trailers and pumped into tanks having a total storage capacity of 30,000 gal. Asphalt tanks and feeder lines are jacketed with steam coils. The 848 plant has a 75-hp steam boiler and the new plant has a 100-hp unit. Fuel oil for the Hauck burners on the dryers is stored in a 10,000-gal tank.

For the high-type bituminous concrete surface course, graded sand is trucked in from a local producer. Trap rock from quarries in eastern Pennsylvania is brought in by rail to a siding about 1 mi from

the plant. A Barber-Greene car unloader keeps several trucks busy hauling to the stockpile at the plant.

A fleet of about 40 rented trucks carries the mix to the roadway where two Barber-Greene finishers working together lay the base in three 2-in. lifts and the top in one 1½-in. lift. One Buffalo-Spring-field 3-wheel tandem and two Galion 2-wheel tandem rollers do the compacting.

J. McGarry is superintendent and C. Erisman is materials engineer for Tioga Construction Co. The work is under the direction of the New Jersey Highway Authority.

M ON THE SUPER HIGHWAYS



Contractors get big assist from INTERNATIONAL TD-24s as \$823 million super road enters final construction

The New York Thruway is now a year from completion . . . 427 miles long with four authorized extensions totaling another 128 miles . . . \$823 million projected construction cost . . . approximately 80,000,000 cubic yards of rock and stone to be moved.

stage.

Road builders on the Thruway from New York City to Buffalo have banked on INTERNATIONAL TD-24s to keep them on schedule... clearing the right of way... pulling bigger scraper loads faster than any other crawler... pushing elevating loaders... push-loading like no other crawler can... leveling and compacting fills.

Whether you handle big Thruway contracts or do custom work, your International Industrial Distributor is the fellow for you to call today for demonstration proof of how the complete INTERNATIONAL line of nine crawler and rubber-tired tractors can cut your costs.

INTERNATIONAL HARVESTER COMPANY CHICAGO 1, ILLINOIS

Pushing Completion of New York Thruway



250 LOADS IN 10 HOURS is the production pace maintained by these 3 TD-24s and scrapers for the Savin Construction Corp., Hartford, Conn., on one of four contracts the firm has on the Thruway in Greene County. Savin uses 7 TD-24s to move 6 million cubic yards.



SUPT. RATES TD-24s TOPS, "Our INTERNATIONAL TD-24s and scrapers deliver paydirt faster than any others on the job—usually more than 100 loads each in 10 hours," says J. P. Connor, superintendent for Smith Construction Company, Pelham, N. Y., subcontractors of 1,500,000 cubic yards of earthmoving.



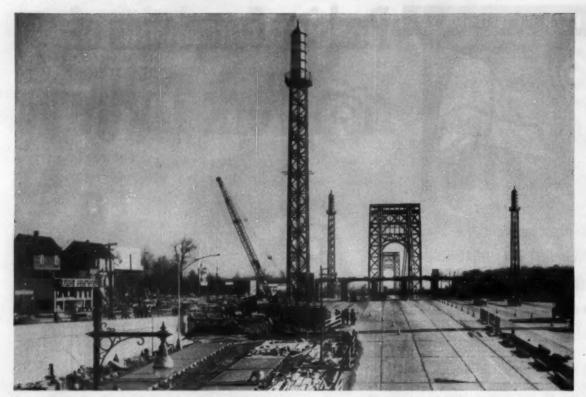
BEARCATS IN THE BORROW PIT are these two INTERNATIONAL TD-24s used by Arute Brothers, Inc., New Britain, Conn., on two Thruway prime contracts totaling \$3,082,905 in Monroe County. Four TD-24s are used for push-and-pull loading and for leveling the fill.



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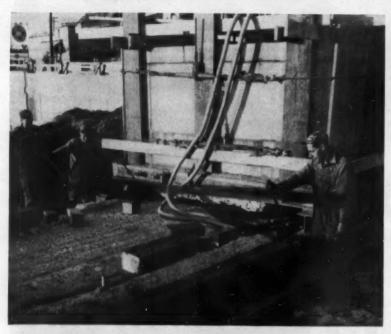
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HIGH STEEL TOWERS at New Jersey toll plaza of George Washington Bridge are skidded 36 ft to new foundations. Concrete bases

were first undercut, carriage structures inserted, the rest of the base drilled through, and the complete unit moved.

Towers Skidded to New Foundations



TWO 25-TON JACKS skid the 80 tons of tower and base off its old foundation. Wood blocking in 8-in. increments is placed between the jacks and kicker angles welded to the steel beam rails. Only 12 hr were required to move each tower.

FLOODLIGHT TOWERS 113 ft high and weighing nearly 80 tons each were skidded 36 ft on steelbeam rails.

As part of a widening project, Grow Construction Co. was required to relocate the four high steel towers at the New Jersey toll plaza of the George Washington Bridge. The existing granite and concrete bases on two of the towers could be reused, so it was decided to skid the structures with the 12-ft square bases intact. The other two towers were detached from their bases and moved by cranes.

The general plan was to undercut the concrete foundation on two sides, insert a steel carriage structure, cut out the rest of the block by line drilling, and then skid the entire unit by jacking it along on steel-beam rails.

Earth was first removed from around the old tower base, and then a wagon drill mounted for horizontal drilling cut two 12-ft long slots 2 ft square in the sides that were parallel to the direction (Continued on page 70)

Page 68 - Construction METHODS and Equipment - October 1954



Extending the ine Turndi



DIGGIN' IN FOR DEMATTEO. "After aix weeks of rain it's mighty nice to see our TD-24s delivering 24 cubic yard payloads to help us get back on schedule" reports F. L. Kirby, superintendent for DeMatteo Construction Company, Quincy, Mass. Eight TD-24s are on the job.

Contractors using fleets of INTERNATIONAL TD-24 crawlers to complete 67.5 mile Portland to Augusta addition

With traffic on the present Maine Turnpike running 10 years ahead of estimates, the pressure is on to complete the 67.5-mile Maine Turnpike Extension from the Portland by-pass to the outskirts of Augusta.

And contractors all along the Turnpike Extension are off-setting a six weeks' delay due to rain in early summer by using fleets of big 155 drawbar horsepower INTERNATIONAL TD-24 crawlers to make the dirt fly . . . hauling dense scraper loads . . . pushloading as no other crawler can ... towing 50-ton compactors ... every bulldozing job on the right of way from pioneering to finish grading.

Match the production of these INTERNATIONAL earthmovers against your present equipment tomorrow by calling your International Industrial Distributor today for your on-the-job demonstration.

INTERNATIONAL HARVESTER COMPANY CHICAGO I, ILLINOIS



PACIN' THE BIG DIPPERS. Latrobe Road Construction Co., Inc., Latrobe, Penn. uses three TD-24s on its subcontract with Savin and Supt. F. E. Crowell states, "The TD-24 is the only crawler, bar none, that's been able to keep ahead of our big shovel operations"



IT'S 7D-24s 9 TO 5. The Savin Construction Corp., East Hartford, Conn. uses 9 INTERNATIONAL TD-24s on its 10.585 section of the Turnpike to move 2,000,000 cubic yards of earth and 90,000 cubic yards of rock. Three TD-24s shown compacting a fill near Portland.



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Truck scales as well as other construction and road building equipment can't be pampered or coddled. They've got to be able to "take-it" and perform properly under rugged operating conditions. Thurman Portable Truck Scales have been designed to meet these tough requirements of the industry. In addition to being portable and rugged these scales must perform accurately under all conditions.

Hundreds of Thurman Scales have been moved from job-to-job, some to over 30 different locations during a period of several years. Because the accuracy is carefully built into these sturdy scales—it remains there.

Installation on-the-job takes but a few minutes. Place the scale, as a unit, on firm, solid ground, "ramp-up" earth or gravel at both ends and you're ready to weigh. For more complete information on deck lengths (18 — 43 ft.) and load capacities (20 — 50 tons), write for our folder: "Accurate, Portable Weighing".

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TOWERS SKIDDED . .

Continued from page 68



CRANE at center of turning arc easily swings tower on to new foundation. Bases of two easterly towers could not be salvaged, so skidding method was not used.

of move. An 8-in carriage beam set on top of a 12-in. rail was inserted in each slot and grouted in place. To extend the rails 36 ft to the new foundation, beams were set on concrete footings spaced about 11 ft apart. Line and grade had to be watched closely to keep the rails parallel and on grade.

To tie the two carriage beams together, angles were anchored to the front and back of the base and welded to the top flanges of the beams. The danger of high winds overturning the tower was eliminated by uplift lugs that tied the adjacent flanges of the carriage beams and the rails.

When the carriage assembly was in place, the concrete between the two slots was cut by line drilling. To do this, the wagon drill was remounted on a horizontal pipe to drill holes 3 in. on center across

(Continued on page 72)



UNDER CONSTRUCTION MMMM PROPOSED

INTERNATIONAL TD-24 crawler tractors preferred by contractors on toughest phases of Ohio Turnpike construction

An estimated 29,506,100 cubic yards of earth and rock is being excavated and an estimated 46,905,000 cubic vards of borrow and fill will be moved before the great new 241.1 mile Ohio Turnpike is completed.

All along the Ohio Turnpike, from the eastern terminus in Mahoning County to the western terminus in Williams County. INTERNATIONAL TD-24 crawler tractors are taking over the toughest earthmoving jobs.

With 155 drawbar horsepower, the INTERNATIONAL TD-24 can conquer any big job. And the durability of every TD-24 means less maintenance, downtime, and operating expense, more profit for owners.

For full details or an on-thejob demonstration with the TD-24 or any of the other six great INTERNATIONAL crawlers and two rubber-tired tractors with scrapers or bottom dump wagon, call your International Industrial Distributor today.

INTERNATIONAL HARVESTER COMPANY CHICAGO 1, ILLINOIS

Opening up the Ohio Turnpike



HEAP LOADS IN A HURRY. One of Julian Construction Co's seven TD-24s pushloads a new INTERNATIONAL 2T-75 two-wheeled rubber-tired tractor near Wauseon, O. Julian has 1,000,000 cu. yds. of dirt to move in sub-grading 7.2 miles of the Ohio Turnpike.



LOADING IN MAHONING COUNTY. Two of D. W. Winkleman's five TD-24s complete fast cycles in spite of soggy going south of Youngstown. Roughly three-and-a-quarter million cubic yards will be moved on this contract.



SPEEDS SOIL-STRIPPING FOR SMALLEY. Approximately 3,600,000 cubic yards of earth will be moved by D. R. Smalley and Sons, Celina, Ohio. One of their three TD-24s is used to pull a loader in the borrow pit near Milan, Ohio.



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For the toughest, roughest wear, plus the most in operating efficiency, this belt has proven itself at Southern Pacific Milling Company, Santa Barbara, Cal. Made of high-quality duck with friction and cover of tough, age-resisting cold rubber. Skim coat between plies. Flexes freely and resists puncture by rock, shale, gravel and other abrading materials. Tough construction eliminates danger of bolt tear-outs and ply separation. Available with corrugations across top cover if specified. For a dependable highway to greater production, use Ebonite—another Quaker quality product for your heaviest belt-bearing loads.

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TOWERS SKIDDED .

Centinued from page 70

the complete width of the block. The remaining concrete between the holes was then removed by holding the drill steel in a channeling device.

The tower was now completely supported by the two carriage beams and ready to be skidded ahead. Kicker angles were welded to the rails in back of the carriage beams to buck against the two 25-ton hand-operated gear jacks. As the tower moved ahead, wood blocking in 8-in. increments was placed between the kicker angles and the jacks. The kickers were moved ahead every 8 ft. About 12 hr were required to move each tower 36 ft to its new foundation.

When the tower was finally relocated, a new concrete foundation was poured around the carriage beams, cross-tie angles, and that part of each of the skid beams which fell within the foundation.

The two easterly towers were easily moved with a crane by swinging them on to their new foundations. Four lifting eyes were welded to the top frame.

A Lima 120 crane with 110-ft beam and 30-ft jib was positioned at the center of a 28½-ft-radius circle. Four %-in. wire-rope slings each 27 ft long were shackled to the lifting eyes and a slight strain taken on the tower. The anchor bolts were then burned off, the tower was swung over its new foundation, and bolted in place.

Charles Goodman, president of Grow Construction Co., devised the skidding method. Eugene Bleecker was field superintendent. Supervision for the Port of New York Authority was handled by Byron M. Gruver, resident engineer.



CONTRACTOR THEO DUNN, Oakland, Calif., tired of stretching to get tools out of the conventional tool boxes on inside of his pickup, put boxes under the "roof." Works fine.

DRUM UP ON DU PONT "ZEREX"

—and save money these 5 important ways:

1. "ZEREX" IN DRUMS SAVES ANTI-FREEZE!
You save anti-freeze because it's more economical to protect initially and to make up radiator losses with pre-mixed "Zerex" and water than by

dumping in cans of anti-freeze and adding water separately.

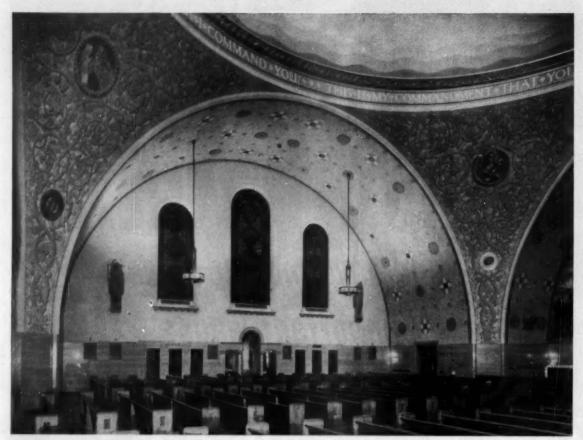
- 2. "ZEREX" IN DRUMS SAVES HYDROMETER CHECKS! You save time because there's no need to check each radiator. Just take one reading of the pre-mixed "Zerex" and water solution in the drum.
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 You save the time of a trained mechanic because a pre-mixed "Zerex" solution can be installed by any help who can drain and refill a cooling system.
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 You save on pilferage of anti-freeze when you switch from gallon and quart cans to "Zerex" in drums.
- 5. "ZEREX" IN DRUMS IS MORE ECONOMICAL!
 You save 8¢ per gallon plus the resale value of the empty drum—that's \$15 to \$20 saved on each 100 gallons.

ORDER YOUR DU PONT "ZEREX" NOW!



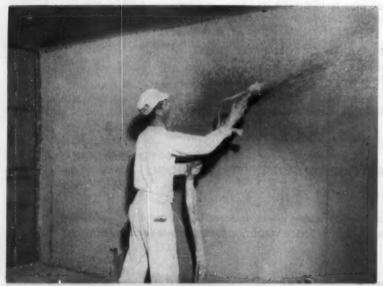
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Decorations on acoustical plastic in Detroit church show that . . .

Expanded Vermiculite Has a Lot to Offer



MACHINE APPLICATION of the lightweight plaster gets the stuff on quickly in a Los Angeles apartment building. Operator is building 2-in. solid partition on ½-in. gypsum lath.

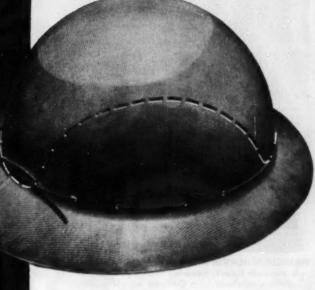
EXPANDED VERMICULITE is a mineral of many uses playing a big part in the construction of lightweight structures and their fire-proofing. It began to figure in design specifications after a 4-hr fire rating was issued in 1939 to a %-in. thickness of vermiculite plaster on metal lath to fireproof a steel floor assembly.

Vermiculite is a micaceous mineral with a fusion point of 2,200 to 2,400 deg F. The finished product is made by heating milled and sized flakes of vermiculite ore to around 2,000 deg F. This releases water molecules present between the layers, causing them to separate and move apart. The individual flake expands to about 12 times its original size, trapping thousands of dead air insulation cells. Additional insulation value is provided by the shiny golden surfaces of the layers which reflect radiant heat.

(Continued on page 76)

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NOW—PLUS PROTECTION throughout the 3 areas of the DANGER ZONE



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M·S·A SKULLGARD

In the new M.S.A. Skullgard, you get EXTRA PRO-TECTION in the *danger zone*—the front, top and back areas of a hat that working positions expose most often to impact.

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Get the facts on this all-important M.S.A. development, Your M.S.A. man will be happy to give you a demonstration. Remember—danger zone protection is exclusive with M.S.A. Skullgards.

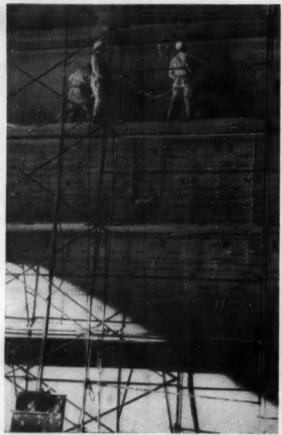




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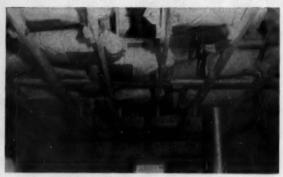
Call the M.S.A. Man an your every safety problem . . . his job is to help you



VERMICULITE PLASTER is applied rapidly with an E-Z-On machine to a mammoth firewall, measuring 75 ft high by 550 ft long, that will divide a warehouse for a California aircraft builder.



FIREPROOFING PLASTER is lightweight, goes on fast without tiring the men placing it over metal lath in a Boston office.



VERMICULITE INSULATION in bags is laid across the joists before ceiling lath and plaster are applied, is poured and levelled later. This method eliminates a lot of complicated handling.

The primary characteristics of expanded vermiculite are its granular structure, incombustibility, light weight, and low thermal conductance. Its main uses in construction are as an aggregate replacing sand in plaster and concrete, as a component of acoustical plaster, and as fill insulation.

Vermiculite aggregates furnish protection to gypsum plaster and portland cement by prolonging the cooling period during which chemically combined water in the gypsum and portland cement is released as steam or water vapor, when exposed to fire. Chemically, vermiculite plaster and concrete are much the same as sand plaster and concrete.

• Large reductions in dead load and in structural steel requirements have been made with vermiculite aggregates. In a 35-story Texas building, the total load reductions made with gypsum-vermiculite plaster and vermiculite concrete floor fill was 15,634 tons. The saving in structural steel was

scaffolding. Vermiculite plaster 1,880 tons. In a Spokane, Wash. hotel, lightweight fireproofing and concrete floor fill reduced the load by 5,000 tons, saved \$62,500 in structural steel and \$40,000 in the cost of footings—which could be cut down in size because they carry less weight.

Even small buildings show economies. In a 70x150-ft three-story California office building, 60 tons of structural steel were eliminated at a saving of \$15,000. The cost of footings was reduced \$7,000. Although only 25,000 sq ft of sound control were required, an additional \$12,500 was saved by integrating the acoustical treatment with the plaster fireproofing. Its builder took advantage of a more recent 4-hr fire rating given to a %-in. thickness of vermiculite plaster, plus 1/2 in. of vermiculite acoustical plastic, to fireproof ceil-

Other advantages include quicker erection and closing-in of buildings, minimum time loss because of weather interruptions, and less fireproofing of the new J.C. Penney building at Denver, lopped 60 days off the construction schedule, an important item to any business house.

Ordinarily a 2-hr fire rating is required for partitions around stairwells, elevator shafts, and exit ways, while a 1-hr rating is needed between individual apartments and other occupancies. Both requirements are met with vermiculite plaster by varying its thickness, instead of changing to another type of partition or material.

Vermiculite on the Job

• Vermiculite-gypsum plaster is mixed and applied like sand plaster. The vermiculite aggregate is marketed in 4-cu ft bags that weigh about 32 lb. Five bags of aggregate replace 2,000 lb of sand. Better control in mixing can be exercised, since a bagged aggregate is easier to proportion and the plaster is less apt to be mixed lean. Vermiculite aggregate is uniform in size and (Continued on page 78)

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IWIN DISC CLUTCH COMPANY, Racine, Wisco Hydraulic Division, Rockford, Illinois

quality and is relatively free from foreign matter. All these factors have a bearing on the strength and uniformity of the finished plaster.

Plasterers like this aggregate because it eliminates the labor of breaking up and thawing out a frozen sand pile in winter. Mixing can be done inside the building on any floor with no danger of overloading floor supports. There is no waste, and on small jobs the necessary number of bags can be thrown into the back of a passenger car and taken out with the

Vermiculite plaster has good workability and "hangs on" well while setting—a decided advantage on ceiling work. One inch of vermiculite plaster fireproofing with its reinforcing and supporting channels weighs only 4 to 5 lb per sq ft, enabling a crew to cover greater areas in a day.

The finished plaster is resilient and will absorb considerable shock without shattering. Solid partitions of vermiculite plaster have passed severe impact tests by a wide margin of safety. Nails and picture hooks can be driven into it without causing unsightly cracks, and it can be readily cut, making the carpenter's finish work easier. Patching is easy. And the introduction of a pneumatic pump to spray on lightweight plaster has opened new opportunities for vermiculite.

· Vermiculite acoustical plastic is a ready-mixed incombustible product that requires only the addition of water. It has a noise reduction coefficient of .65 for a 1/2-in. thickness. Large batches can be mixed and allowed to stand over night, or longer, without danger of setting. The wet material is extremely adhesive and can be troweled over any clean, firm, water-resistant surface such as brown coat plaster, masonry, oil-painted surfaces, and the like.

Best results are obtained by applying the plastic in two coats: the first, % in. thick; the second, 1/8 in. thick. The first coat is left straight and allowed to become partially dry before the final coat is applied. The finish coat may be troweled or stippled with a rice brush. This acoustical treatment is easily applied to curved and irregular surfaces, and the material can be decorated with water base paint without imparing its sound reduction coefficient.

When vermiculite acoustical is machine-applied, several different textures can be obtained by changing the motor speeds, by raising or lowering the air pressure, and by reducing the distance of the nozzle from the surface being sprayed. Record speeds are possible with machine-application. In the mammoth new Army Finance Center at Ft. Benjamin Harrison in Indiana, 20,250 sq ft of vermiculite acoustical were applied on ceilings daily.

. Vermiculite plaster finish is a hard, durable trowel finish made with bagged vermiculite finish aggregate, unfibered gypsum plaster, and water. It can be mixed by the

Vermiculite finish is applied the same as a white coat. The gypsumto-gypsum application assures a strong bond to the base coat and, even when applied directly to concrete, the material adheres tenaciously. During construction of a luxury apartment building in Los Angeles, the owners saved about \$10,000 and got a better looking job by applying a 1/8- to 1/4-in. thickness of finish to the concrete ceiling, instead of grinding down the concrete.

• Vermiculite concrete is a mixture of portland cement, vermiculite concrete aggregate, and water. The aggregate is marketed in 4-cu ft bags that weigh about 36 lb. Members of the Vermiculite Institute treat the aggregate chemically to assure uniformity and to prevent capillarity of the concrete. Photomicrographs of a cross-section of cured concrete show a structure resembling a honeycomb. It is nailable and can be cut with a saw.

The weight, strength, and thermal conductivity of the material depend on the ratio of portland cement to aggregate. For example, the 1:4 mix (1 part portland cement, 4 parts vermiculite aggregate, and about 12 gal of water) has a density of 35 lb per cu ft, a compressive strength of 325 lb, and a "K" factor of .97.

Vermiculite concrete has good fire resistance. An exploratory test made on a slab 3 in. thick showed that after 4 hr's exposure to a flame temperature of 2,000 deg F., the cold side of the slab reached

only 186 deg F.

Job-mixed vermiculite concrete is prepared in a mechanical mixer, preferably of the paddle type that has a stationary drum with rotating paddles. Any sequence of charging the mixer is satisfactory which results in all water and all aggregate coming together at one

(Continued on page 82)



RADIANT

ON THE JOB THE

To: THE SILENT GLOW OIL BURNER CORP. 866 Windsor Street, Hartford 1, Conn.
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Operating five large track-type tractors each with 12 bottom rollers, 4 carrier rollers, 156 track links, 78 grouser pads, 2 idlers, 2 sprockets and one dozer blade, replacement cost was figured to be approximately \$13,800. Rebuilding these parts with the Amsco Leader cost approximately \$3,700 or a saving of about \$10,000. Plus the fact that the rebuilt parts gave nearly double the service life of new parts.

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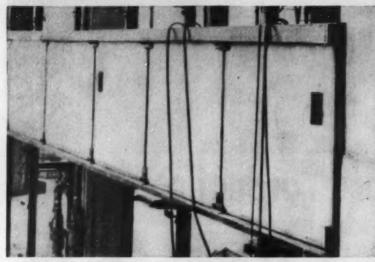
Tuffy

Dragline

resistance, extra flexibility! Rides better on grooves, hugs drums when casting!



Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric



SPANDREL WALL CONSTRUCTION is popular. Precast vermiculite concrete panels are bolted in place on light steel framing around the outside of Missouri's state office building.



VERMICULITE CONCRETE ROOF DECK is screeded over form board atop Georgia factory. Cement finisher uses a bull float to finish the slab. Troweling is not necessary.



EXPOSED UNDERSIDE of warehouse office floor over truck loading platforms weathers well. Insulating qualities of vermiculite concrete make floor radiant heat possible here.

time. The concrete is mixed for approximately 3 min and placed immediately.

When transit-mixed, all water, cement, and aggregate are placed in the mixer in this order. The drum is turned only enough to obtain a uniform mix, and is not turned en route to the site. There the batch is remixed for approximately 1 min. Enough water to obtain a 6 to 9-in. slump is added, if necessary.

The concrete is placed in panels about 12 ft wide, or whatever width can be conveniently screeded and finished. Screeding usually provides the desired finish, but a smoother surface can be obtained by floating. Troweling is unnecessary and is not recommended.

Vermiculite concrete is cured the same as sand-and-gravel concrete. In warm weather the finished surface must be kept from drying out for three days. In cold weather it must be protected against freezing.

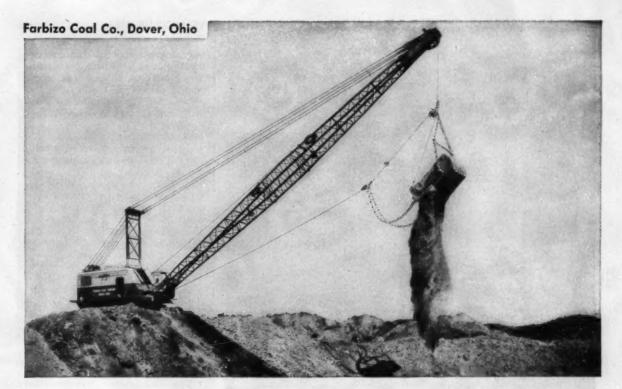
Uses of Vermiculite Concrete

• As roof insulation, vermiculite concrete has gained recognition as an efficient, incombustible material. It does not rot nor disintegrate. There are no joints to open up. It is not damaged by exposure to weather before built-up roofing can be applied and is not affected by roof leaks. The insulation, including cants, saddles and crickets, can be placed monolithically all at one time.

The 1:4 mix is poured over paper-backed wire lath, high-rib metal lath, or vented sheet steel. It also is used over some form boards (insulation board and asbestos board, etc.) supported by sub-purlins.

The 1:6 mix is used as a fill over a structural roof deck. If desired, the structural deck may be designed dead level, and the necessary drainage slopes and insulation values obtained by varying the thickness of the vermiculite concrete. This mix also is used as an insulating slab for grade level floors, radiant heat floors and snow melters.

• Floors-on-ground should be laid over a stable, well-drained and properly graded earth base and a 4-in, gravel fill thoroughly tamped. When required, because of ground water conditions, a membrane waterproofing should be applied (Continued on page 84)



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"Following are the pertinent facts with reference to the Marion 111 M Shovel using DC-330 Oil since January, 1951:

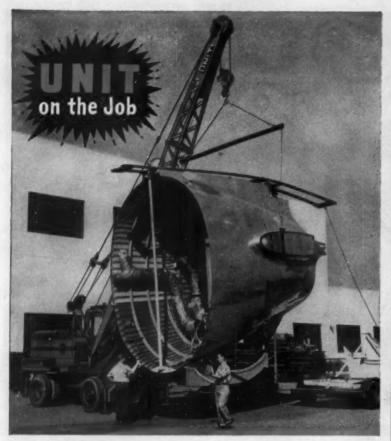
"Developed ample power with TWIN G.M.C. Diesels operating at 1550 R.P.M. Operated 16,280 hours with no motor breakage or repairs. Mined 203,000 tons of #5 coal from 36" seam with an average over burden of 35 feet hard pan shale with streaks of iron ore bands.

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1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



VERMICULITE USES .

Continued from page 82

over a grout coat of portland cement placed over the gravel fill. This grout coat, at least 1/2 in. thick, should consist of 1 part portland cement and 3 parts sand, broomed or floated in place to a smooth sur-

When hardened and dry, the grouted surface is covered with a layer of 45 to 55-lb smooth surface roofing, or equal, with edges welllapped. The roofing should be continuous over the entire floor area and carried up on the inside of the walls to a point 1 in., or more, above the finished floor level. Asphalt plastic cement is used at edge laps and in attaching the roofing to wall surfaces.

vermiculite concrete is The placed over this vapor barrier to a minimum thickness of 3 in., and is covered with a sand-concrete topping. If radiant heat pipes, ducts, or electric cables are incorporated, they are laid on top the vermiculite slab and covered with sandconcrete.

The minimum recommended thickness of the topping is 2 in., except where radiant heating units are used. In that case the minimum thickness over the top of the heating units should be 11/2 in. The topping and its reinforcing should be designed to carry the maximum live load.

· Spandrel wall construction is the newest use for vermiculite concrete. It is combined with an exterior facing, such as aluminum, steel, or porcelain enamel. Firewise, the material is in a class by itself. A 5-hr rating was recently given by Underwriters' Laboratories to a spandrel wall panel of 1:4 mix vermiculite concrete, 4 in. thick, machine-applied over paperbacked wire lath.

The Jefferson State Office Building, completed not long ago at Jefferson City, Mo., has 25,000 sq ft of vermiculite concrete panels precast in permanent steel frames and faced with extruded aluminum. The typical panel (reinforced with 6x6x10:10 wire mesh embedded midway) is 4 by 5 ft in size, 3 in. thick, and weighs 10 lb per sq ft. The panels permitted rapid erection; an area covering 20 sq ft was placed by two men in 20 min.

· Masonry cavity walls can be satisfactorily insulated with a very lean 1:16 mix, which has a "K" factor of .46. Two walls are built 21/2 (Continued on page 88)



The MacClosky company is working on the interchange in the left center of the above picture. At right, MacClosky's crane with Yellow Strand Wire Rope, sets a concrete bucket into pouring position.

Freeway Interchange To Serve 11,000 VEHICLES AN HOUR!

CHARLES MacCLOSKY CO. SPEEDS LINK IN LOS ANGELES ROAD SYSTEM

In one 16-hour period, more than 144,000 vehicles of all types passed through the major intersection of the Santa Ana Freeway, the Ramona Freeway and the Hollywood Freeway in Los Angeles. To provide safe passage for these many motorists, an interchange is being built at the intersection. The threeway interchange will allow traffic to flow without interruption on the busy Freeways.

Charles MacClosky Co., of Los Angeles, is the contractor on the important project. Scheduled for completion in May of '55, the contract is kept ahead of schedule by skillful planning of work and equipment. Heavy traffic continues to flow while the work progresses.

At present, bottom decks and stems of the cantilevered, hollow-box girder bridge are being poured. A Moto-Crane is used to lift 3/4 yd. concrete buckets to pouring position. The crane, like all MacClosky machines, is equipped with Yellow Strand Wire Rope. The hoist line and boom lines are 5/8" 6 x 19 Preformed Yellow Strand, IWRC.

Yellow Strand is first choice for the Charles MacClosky Co. as with other major contractors. The rope's strength, uniformity, flexibility and wear resistance has kept it first choice for more than 75 years. And Yellow Strand's superior performance is backed by the superior service of Broderick & Bascom distributors. Speedi-Service is their pledge to any wire rope user.

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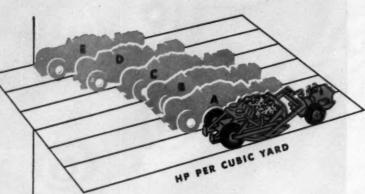
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See how fast Allis-Chalmers Motor Scrapers accelerate to "get the jump" on normal production from the moment they leave the pusher. See how safely they highball with a full load...how fast and steady they pull through the deep fill and return, up grade, to start a new cycle. Compare these Motor Scrapers on the basis of work done per dollar of investment. We think you'll agree an Allis-Chalmers Motor Scraper is your number one earth-moving value.



ACCELERATES FAST

The TS-200 develops 17.6 hp per cu yd struck capacity...the TS-300 develops 20—the highest ratios in their respective classes. With more power to move the payload, these machines get away from the pusher fast and maintain high average speeds throughout the entire cycle.



PERFORMANCE MAKES DOLLARS WHEN DESIGN

YOU'LL SEE

Out-produce

WEIGHT DISTRIBUTION LOADED

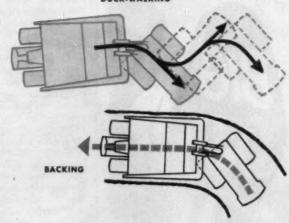


HIGHBALLS WITH THE PAYLOAD SAFELY

Loaded, the Allis-Chalmers Motor Scraper has equal weight on all four tires. This ideal weight distribution, together with low center of gravity, direct hydraulic steering which eliminates jack-knifing, and big air brakes on all four wheels, allows the Allis-Chalmers Motor Scraper to take advantage of its high hp ratios by maintaining fast, yet safe haul speeds.



DUCK-WALKING



MANEUVERS EASILY

There are no steering brakes to rob you of tractive power. Instead, direct hydraulic rams turn the tractor in the desired direction of travel. Steering is sure and positive—even going down extremely steep slopes in loose footing.

By swinging tractor left and right with the steering rams, the Allis-Chalmers Motor Scraper can duck-walk through heavy going where others bog down.

Backing up in close quarters is simple. Two-wheel tractor has complete control over scraper body . . . can even change directions without forward or backward movement.

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COMPLETES THE ROUND TRIP QUICKLY

The return trip from the fill is usually uphill. That's where two-wheel design pays off. When empty, 66 percent of the Motor Scraper's weight is carried on the traction wheels. There are no front wheels to rob drive wheels of tractive weight or to create rolling resistance in heavy going. This enables the Motor Scraper to make the round trip faster and usually in higher gear than other units.

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ALLIS-CHALMERS

October 1954 - Construction METHODS and Equipment - Page 87



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VERMICULITE USES . . . Continued from page 84

in., or more, apart, and the space between is filled with the insulating concrete. Three or four courses of the inside wall are laid up first. A vapor barrier of asphalt paint is applied with a brush or sprayed on the cavity side. The outside wall is then laid up to the same level, and the necessary wall ties are placed. As soon as the mortar used in laying the blocks has set, vermiculite concrete is rodded into the cavity. The procedure is repeated until the required height is reached.

Single-unit walls of masonry block can be insulated by filling the cores with this mix. Due to the conductance through the solid portion of the block, such a wall does not provide as much insulation as the cavity wall, but it is twice as efficient as a wall with the cores left open.

By Machine, too

• Machine application of vermiculite concrete is popular in the fire-proofing and insulating of walls and ceilings of masonry and metal buildings, elevator shafts and similar confined spaces, beams, trusses, girders and columns. It may be blown directly to a metal surface or to expanded metal lath or wire netting. A 1:12 mix is ordinarily used.

In the gunning operation the dry materials are premixed and placed in a hopper. From this they are pumped through a hose to the nozzle head of the gun. As they hit the nozzle, the cement and aggregate are mixed with water. The amount of water used depends on the type of application and whether fresh or rebound material is being applied. Unlike sand concrete, which must usually be discarded, vermiculite concrete rebound can be shoveled up and used again: hence, there is no waste. An average of about 300 sq ft per hr can be covered with a 11/2-in. thickness by one machine.

Vermiculite-Sand Concrete

Vermiculite-sand concrete is used as a lightweight concrete floor or fill over structural metal or concrete floors. The usual mix is 1 part portland cement, 3 parts vermiculite aggregate, and 2 parts sand. It weighs about half as much as ordinary concrete and has more than four times as much insulation value. The compressive and indentation strengths of this concrete are adequate for its use as a base for tile, linoleum, terrazzo, or carpeting.

Vermiculite Loose-Fill Insulation

Vermiculite loose-fill insulation has been used for more than a quarter-century to insulate attics, lofts, and side-walls. This insulation does not decompose or rot, cannot be tunneled by rodents, and does not attract termites or other vermin. It does not irritate the skin or lungs, and presents no silicosis hazard. Vermiculite is a nonconductor and can be safely installed around electrical wiring.

Sound-Deadening

Good sound-deadening can be obtained with 3 to 4 in. of vermiculite fill in partitions and floors. In some existing buildings this may not be economically feasible. Where the partition studs are 3% in., holes may be bored in the top plate so the vermiculite can be poured into the stud spaces. An alternate method is to remove one side of the partition and install new staggered studs. Ordinarily there is sufficient space between the floor and the lath and plaster of the ceiling below into which the vermiculite can be poured. The procedure is the same as for insulating a floored attic.

Cold Storage Insulation

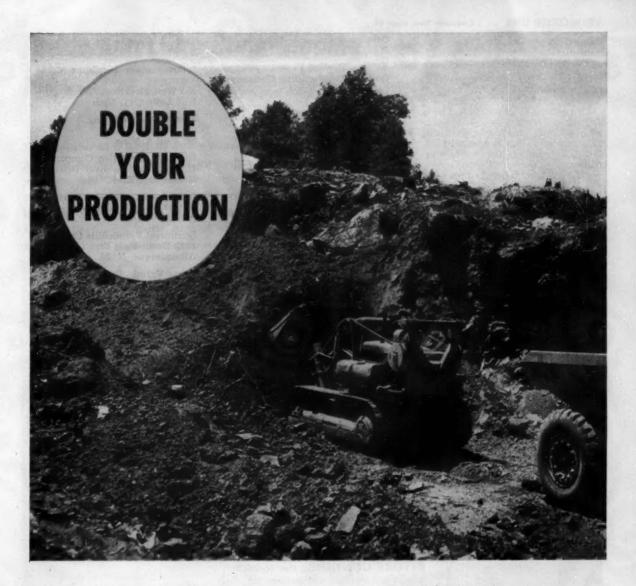
sized Specially vermiculite, known as refrigeration fill, is used to insulate cold storage walls, ceilings, and floors. It is extremely important to vapor-proof coldstorage insulation. Two acceptable types of vapor barrier are: two layers of glossy surfaced, asphaltimpregnated paper with the edges lapped 4 in. and sealed: or, two layers of tarred felt in three moppings of hot pitch. The vapor barrier is placed only on the warm side of the insulation.

Vermiculite-Asphalt Roof Fill

Vermiculite-asphalt roof fill consists of expanded vermiculite and a special asphalt that binds the granules together into a tough, flexible mat. The fill is mixed on the job, may be placed over any structural base to any desired shap or thickness and any drainage slope required. It is easily formed around obstructions and into cants, saddles, and crickets.

The installation equipment consists of a mixer equipped with a blow torch; oil-fired roofing kettles; wheelbarrows; wood tampers, and a lawn roller filled with sand to weigh around 500 lb.

The hot mix is placed and (Continued on page 90)



Digging in heavy rough rock, conglomerate, unbroken sedimentary material or clay is hard on equipment doing the excavating. To stand up under this work day in and day out, the excavating equipment must be specially designed.

Eimco had these jobs in mind when the 105 was designed and its excavating attachment will do many jobs previously possible only with large, expensive boom type equipment.

The illustration above shows excavation in hard red clay without preliminary drilling and blasting. Average production is better than 150 trucks per day, better than double the production of conventional front end loaders with equal weight and horsepower on the same job.

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You Can't Beat An Eimco!



VERMICULITE USES . . . Continued from page 88

tamped to the required thickness immediately after it is screeded, and is rolled to a smooth, level surface. The deck is finished with built-up roofing.

This helpful information has been developed through the kind assistance of the Vermiculite Institute, 1720 Madison St., Minneapolis 13, Minn. Members of the Institute include:

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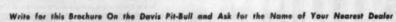
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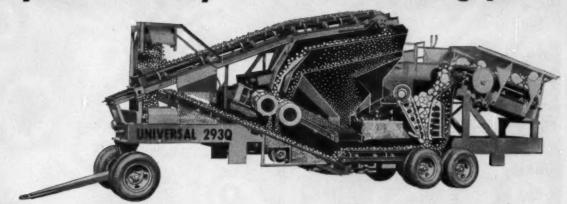


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To 2nd

To 3rd

Stoge

Stage

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With 380 hp plus individual drive to each track, Euclid's new ...

Twin-Engine Tractor Packs Plenty of Push

A CM&E Equipment Report

SOME RUMORS were confirmed, some dispelled, a few weeks ago when the Euclid Division of General Motors Corp. unveiled its first crawler tractor, the TC-12. The 380-hp machine won't do everything some of the wilder rumors claimed: It won't obsolete existing crawlers, by a long shot. (Anyway, the TC-12 is still undergoing further field tests.) But the machine does incorporate many radically

new features that are not available in tractors currently in production.

Most unusual feature of the Euclid crawler is that each track is powered independently—a 190-hp diesel engine working through a torque converter and automatic transmission drives each side. The two halves of the tractor are separate, connected only by a 7-in. dia transverse shaft on which they are free to oscillate a maximum 7 in. Another feature: Tracks that are automatically and correctly tensioned by a hydraulic device.

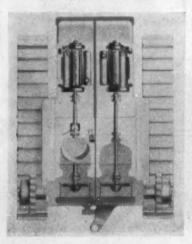
In developing the big TC-12, Euclid's thinking was that crawler tractors had not kept pace with the increase in size of other types of earthmoving equipment. It's often necessary to use two push-tractors in tandem to help large scrapers load, for example. And for some heavy dozing jobs, it's been necessary to couple two tractors sideby-side, Siamese style (CM&E, April '51, p 54 and Nov. '51, p 101). Hence Euclid wanted plenty of power in its new machine. It got this power with twin engines, GM 6-71's, that turn out a total of 380 hp.

Doubling-up engines already being produced in quantity made development of a large new engine unnecessary. At the same time, because the existing engines have long been used in other construction equipment, parts supply and cost would be favorable.

This philosophy of using jobproved smaller components in pairs to make a big machine was extended to the TC-12's drive train too. Behind each engine is an Allison torque converter and Torqmatic transmission, with Euclid planetary final drive. The latter is the same as those in Euclid's 50ton rear dumps and 25-yd wagons.

Pairing the components, and having each set drive one track, has other advantages. It allows the tractor to be split down the middle. Thus, on side-boom pipeline work for example, track gage can be widened without disturbing any precision fits. And the machine can readily be separated into two halves to bring width and weight within highway transport limits.

Most important advantage of the independently driven tracks is in improved steering. The TC-12 can be steered by (1) throttles indi-



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vidually controlling each engine, (2) braking either track, (3) placing one transmission in neutral and using the track brake, or (4) putting one transmission in forward and one in reverse. This flexibility permits turns ranging from even, gradual ones to tight pivots under full power.

For all its power, the new tractor is comparatively lightweight — 53,000 lb bare, 65,000 lb with dozer. Euclid wanted this high power-to-

weight ratio. They felt that higher drawbar pulls at higher ground speeds were necessary for most efficient pusher loading. And Euclid's tests indicate that the TC-12 develops approximately twice the drawbar pull of current "big" tractors at 2½ mph—the average first-gear speed of most rubber-tired scrapers. Maximum drawbar pull is listed as almost equal to tractor weight, plus accessories.

To make it easy for the operator

to control this power, Euclid has fitted the TC-12 with torque converters and automatic transmissions that give three speeds forward and three reverse. Speed ranges are approximately 0-3, 3-6 and 6-8 mph. There is no master clutch, and shifting is accomplished under full power. The tractor can be shifted from one speed range to another without loss of motion, or into reverse while still going forward.

TC-12: First of a Family

THAT EUCLID has jumped into the crawler tractor field with both feet was made abundantly clear at the TC-12 unveiling on Sept. 15 near Detroit. Four of the powerful crawlers (one each with push plate, 13½-ft bulldozer blade, 17¼-ft angledozer blade, and pull yoke for a loader) were demonstrated at the General Motors proving ground. These are the vanguard of 20 units that are being placed in experimental field service for further testing. Production models should be coming off the line during the second half of next year. Price: Unannounced.

The TC-12 is only the first of a complete line of crawlers for every contractor requirement, Euclid says. And if the speed with which these first units came into being is any indication, the rest of the tractor family can't be far behind: The TC-12 was designed, developed, built and tested in less than one year following GM's purchase of Euclid (CM&E, Oct. '53. p 159).

The company's not admitting whether or not the other tractors in the line will be twin-engine units. But they do say "in our crawler tractor design we are thinking in terms of (1) an improved power to weight ratio on the bare tractor [as compared to other current makes] and (2) the flexibility of torque converter drive system." And they are developing a full complement of hydraulic and cable-controlled attachments for the crawlers.

In the next five years, the Euclid Division expects to increase its yearly total sales to 2½ times its present volume. Officials are confident that by 1958 their crawler tractor sales will equal the sale of their rubber-tired equipment.

New Rubber-Tired Scrapers

Euclid is not developing its crawler line at the expense of its rubber-tired units, however, for three new experimental self-powered scrapers on rubber were introduced along with the TC-12. All three scrapers are of the two-wheel tractor, overhungengine type.

Smallest was a 7-yd (struck) unit with 138-hp GM diesel, five speed transmission, and full 90-deg hydraulic steering for non-stop turns in 26 ft. The other two scrapers were 18-yd (struck) machines fitted with torque converters and automatic transmissions. One unit (photo across page) was powered by a 300-hp GM 6-110 diesel. The other carried two 190-hp engines, one in the tractor and one behind the bowl to drive the scraper's rear wheels. All three of the rubber-tired scraper models will be manufactured in limited quantities this year.

TC-12: Contractor Likes It

AS AN EXCLUSIVE SERVICE to our readers, to inquire further into the TC-12's capabilities, CM&E checked with a contractor who actually had used the new Euclid crawler on one of his regular jobs. The contractor: Sugden & Sivier Inc., Oak Park, Mich. The job: Building 2¼ mi of test road on grades up to 7% for the GM proving ground at Milford. The tractor application: Bulldozing and push-loading of rubber-tired scrapers.

We wanted to know just what Sugden & Sivier honestly thought about the TC-12. We were interested in finding out whether its unusual design posed any special maintenance or operational problems.

To get this type of information, we arranged to meet privately with Charlie Sugden, president of the construction company, and Al Wilson, his master mechanic. At the proving ground, we all watched while Red Thayer, one of Sugden & Sivier's regular operators, put the TC-12 through its paces. Then CM&E asked Sugden, Wilson and Thayer for their impartial opinions about the tractor, gained from their experience with it on the job.

The consensus: They like it. Fact is, Charlie Sugden said he'd buy one if the machines were for sale now. But there were many more specific questions raised about various features of the TC-12 during our private and exclusive interview. The results are shown on pages 102 and 106.





To see what
Mechanic
Al Wilson,
Contractor
Chas. Sugden
and
Operator
Red Thayer
like about the
TC-12,
turn to pages
102 and 106.

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An exclusive interview with a roadbuilder . . .

Continued from page 99



How is the TC-12 on turns?

"It's good," said Operator Red Thayer after this turn. "With full power forward on one track and full reverse on the other, you can spin right around. That's twice as fast as other machines I've handled, and I've been on all makes of tractors for 4 yr. You can make any kind of turn you want with this machine here. On a pusher, that lets you swing in fast right behind the pan. Travel speed is greater, too. All in all, I'd say this is a good outfit, with all the speed and power you need." "As a matter of fact," Contractor Charlie Sugden interrupted, "the tractor could be a little bigger-heavier, that is -for those two big engines. Maybe add more weight. But GM and Euclid are on the right track. How? Automatic transmission, for one thing. It makes it easy to shift speeds and change direction fast. That's a great time saver. Fast turning ability is another of that tractor's great features. Using standard components is a good idea, too; eases our parts problem. We have several of those 6-71 engines in our other units-our shovels, for instance—so it would cut down our parts inventory.'



What about oscillation?

"Well, you can see how it works as Red backs out of the hole he dug with his tracks when he kept turning around in that full-power spin," explained Master Mechanic Al Wilson. "The two halves of the tractor move, not just the tracks. The two halves are connected by only one big shaft, and they've got stops welded on to limit the oscillation. It should do OK on rough ground; have good traction. No, we've never had any trouble with anything getting caught in that space between the two halves. Any dirt or anything falls in there goes right through. We've never separated the two halves, but Euclid tells us two men can do it in 2 or 3 hr if you want to take the tractor apart for shipping, which we probably wouldn't have to do. After all, Euclid hauled these tractors up here from Cleveland on lowboys without uncoupling the halves.' "What Al means is that we operate just in the State of Michigan," Charlie elaborated. "If Euclid can truck these things over our roads, I don't think we'd have any particular trouble in getting a permit to do it too. We'd move them from job to job whole."



Is it a good dozer?

"Take a look for yourself," said Charlie. "That's not hard packed dirt because they worked this area over yesterday when they had that demon-stration, you know, but it's still a good load. Red's only had 5 or 10 hr on that dozer anyway. We had TC-12s on our road job for a total of 6 weeks -the job's back over there, on the other side of the proving groundbut almost entirely on pusher work; loading rubber-tired scraper units. After watching it perform here, I don't see why that machine wouldn't be a success as a dozer." "I don't know about finegrading", Red expanded later, "'cause I never used it for that. It's a good dozer for heavy grading, though. Sure you can spin the tracks with all that power, but I've never had any trouble. Up en a side hill one day, I just let 'er spin and she walked right out of there with no trouble at all. I've never had her stuck yet."

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... who used the new TC-12 on one of his jobs



Is the tractor easy to operate?

"Yes it is. There's no clutching," Red explained. "You can change from forward to reverse with just one motion. Same thing for shifting speed. The throttles for each engine are set side by side so I can operate them both with one hand, like this. I can work them with my left hand just as well. That lever below the throttles is the speed selector; gives three speeds. All you have to do is move it back and forth. These two levers near my knee control direction of travel. Each one works one track, and they're close enough together for one-hand operation. There are foot brakes for steering each track, too. Electric starting buttons for the engines are on the dash. That little trap door in the deck? That's where you fill the fuel; the tanks are underneath. By the way, the speed selector sticks out to the left on that other TC-12, the one with the push plate. It's the other way on this dozer so I can work the power control unit with my left hand. This left-hand control unit was strange at first, but it took only a couple of hours getting used to. Now it's just as easy as any other."





Have you good visibility?

"Sure. To the front it's increased a lot because of that low sloping hood," Red pointed out, "and you sit up high. You're high enough to have good visibility to the rear, too, even with those radiators back there. They tell me they put the radiators in the rear to keep them out of the dirt and to keep them from blowing dust and heat on the operator, but it looks as though this might be a pretty chilly seat to be on in cold weather. Maybe they ought to put in some ducts or something to blow heat my way. Why'd they put safety belts on these ma-chines? I think they're just for Euclid's test operators. I never use one. This tractor's no rougher riding than any other crawler I've run. 'Matter of fact, with this wide tread and weight low down, it works the other way-for safety, I mean. I never worry about tipping. It's an easy machine to handle. When I ran that Euc pusher over on the job I worked a steady 8- to 9-hr shift with those pans, and I got off the machine less tired than after a day with a regular crawler. That's because it's got so much power and you never have to fight it." Continued on page 106



Why different drawbars?

Bob Garner (above) of Euclid's Sales Development Dept., who happened to be at the proving ground to direct dismantling of the previous day's exhibit, had to be called over to answer that one. "Actually they're both experimental," he said. "This one's attached only to the right side of the tractor, but the 7-in. transverse shaft that connects the two halves of the machine transmits part of the pull to the left side. That other one—on the tractor that Sugden and Wilson are looking over—has a balland-socket arrangement on each side to take care of oscillation. We have other experimental stuff on these tractors; hydraulic track tensioning, for example."

Breaking pavement — with a Tractair-powered Model 52 Le Roi-CLEVE-LAND Paving Breaker. This tool, designed for heavy-duty work, is ideal for breaking the toughest concrets. Operators like its easy-handling power.



Tamping FIII — Tractair with a Le Roi-CLEVELAND Multiple Tamper attachment and work-saving air feed keeps up with either three men shoveling—or a backfilling tractor. You cut costs,



Backfilling — Tractairpowered paving breakers open the trench, Tractairequipped with backfill blade closes it, and Tractairpowered is Roi-CLEVELAND backfill tampers tamp it. Again you save.



Digging — Use Tractair with hydraulic backhoe attachment and you dig as deep as 7 feet — cut through hard ground a pick and shovel con't penetrate — keep the battem of the ditch level — dig straightend walls and square corners. Ideal for cramped quarters. Keeps costs down.





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cuts costs with multi-purpose usefulness

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It doesn't make much difference how big or how small your job is, there are always a thousand and one odds and ends to clean up. That's where Tractair fills the bill. Tractair is a combination 35-hp wheel tractor and 105-cfm compressor. Its mobility lets you take air power where you need it — air power

for drilling rock, tamping fill, breaking pavement.

And when Tractair is equipped with its front-end loader and attachments, you can load, lift, backfill. Tractair can also be used for digging and hoisting.

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Crenford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albuny, Binghamben, Buffale, Leng Island City, Newburgh, Bothester, Saugerties, Syracuse, Whitesbere, Woodside (1.1.) — NORTH CAROLINA. Charlotte — OHIO: Cincinnart, Cleveland, Calumbus, Dayton, Toledo — OKLAHOMA: Oklahema City, Tutsa — OREGON: Portland — PENNSYLYANIA: Bothlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Rapid City, Sioux Falls — TENNESSEE. Chaltanoope, Knouxille, Memphis, Noshville — TEXAS: Dallas, El Pase, Heuston, Lubback, San Antonia — UTAH: Sait Lake City — VIRGINIA: Richmend, Roonake — WASHINGTON: Southe, Sociane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaytes — WYOMING: Cosper.

Contractor says TC-12 cuts loading cycle...

Continued from page 103



Is it good as a pusher?

"That's where I think it's best," Charlie Sugden said. "Watch Red turn sharp and cut in and get into position behind that scraper fast. That's where you save time. Of course, that turn was a full 180-deg swing. But even if you're always loading out in the same direction and the pusher has to back up for the next unit, the variety of turns the Euc tractor can make should be a help. High backing speed helps, too. The tractor also gives you a lot of push at high travel speed. That way, you can get the scraper loaded fast and kick it off in third gear; give it a good start until it gets rolling at a pretty good clip. Of course, if the tractor didn't have all that power, you wouldn't be able to shift up to higher gears to get the scraper out in a hurry. I told you about the grading job we had that pusher on-it's the



same machine; Euclid just painted that TC-12 on there for yesterday's show—well we ran some time checks on that job. We were loading 18-yd scrapers in about 1 min with our regular tractor as a pusher, and it's a big one. When we put the Euc trac-

tor in there, we cut 10 to 15 sec off the loading cycle. Red was operating it for us; he's had better than 50 hr on that pusher. Yes, the TC-12 is a real big machine, but it's still small enough to travel in the path of our scrapers."

TC-12 Specifications

1				
	HORSEPOWER:	380 engine hp	STEERING:	With engines, transmissions and brakes
	WEIGHT:	53,000 lb bare; 65,000 lb with dozer	STARTING:	Electrical starting
	DRAWBAR PULL:	Maximum almost equal to tractor weight with working accessories.	TRACK:	Number of shoes (each side)
	TRAVEL SPEED:	0 to 8 mph, three speed ranges		
ı	ENGINES:	2 Detroit Diesel 190-hp model 6-71	GENERAL DIMENSIONS:	
	CLUTCH:	None required.		
	TRANSMISSIONS:	2 Allison Torqmetic drives, CRT-5530		

... should be easy to service and maintain

What about maintenance?

"It looks as though they put in a lot of study and effort on the TC-12 to reduce maintenance time," said Al Wilson after this demonstrtaion by Ike Kay (center) Euclid service representative. "Euclid took care of the tractors we used," he continued, "so we never got to work on them. Everything seems easy to get at, though. One good feature is that final drive. To overhaul it, all you have to do is take out a row of bolts and pull the unit; don't have to remove the track or frame. Same way with the drive sprocket; no track-frame removal necessary." "My guess is that we could make a complete change of sprockets and tracks in less than 6 hr, couldn't we Al?" Charlie broke in. "Both sides, you Al replied. "That's about mean," right-two men, 10 to 12 man-hours."





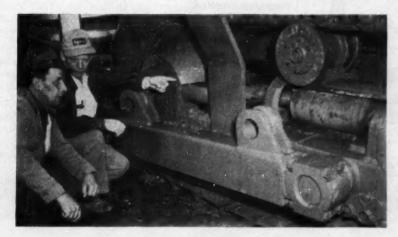
Is it easy to work on?

"Yes, indeed," Ike explained. "Everything has been made just as accessible as possible. To get to an engine, all you have to do is lift off the top hood and swing this hinged front guard down." "Another good idea," Al mentioned, "is that you don't need any special tools to tear this machine down; no special pullers or presses."



Can you get at the transmission?

"Right back in here," said Ike. "The seat folds forward and the radiator tilts to the rear. Both are on hinges. First, you have to unhook the radiator hoses, of course, and the fan drive shaft. The whole works—torque converter, transmission, reduction gears and steering brake—can be yanked out as a unit. It's a package assembly."



What about tracks?

"The TC-12 has an automatic tracktensioning system, you know," Ike pointed out to Al, "and that hydraulic jack and yoke are part of it. They keep a constant, uniform pressure on the front idler. There's also an accumulator to take recoil if you get a stone in the track." "That automatic track tightener is a good idea," Al said afterward. "I should think it would increase track life by about a third. I also understand all track rollers are fitted with roller bearings that can be removed and replaced without breaking the track. That's quite an item, as far as maintenance time is concerned."

CONCRETE MIXING AND PLACING



Fig. 1... UNUSUAL SHAPE of large form panel used for sewage treatment plant. Is built sturdily for many reuses.

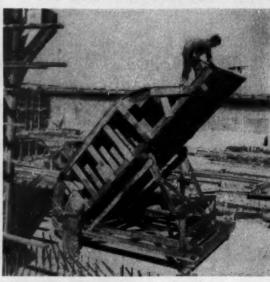


Fig. 2 . . . BEING MOVED for next reuse, same form as at left is trensported on a novel rolling platform. Good planning!

10. How to Plan Forms in Detail

By ALLEN H. PILLING and MARTIN W. BOLL*

*Messrs Pilling and Boll are president and vice-president, respectively, of the Richmond Screw Anchor Co., Inc. They have many years of first-hand experience with concrete structures and have worked out and assembled a vast amount of data necessary to design the proper form for a particular condition.

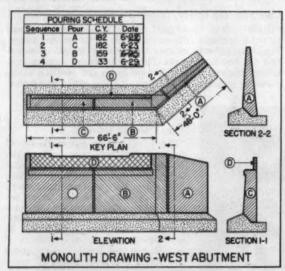


Fig. 3...POURING SCHEDULE planned in advance—and forms designed accordingly—for construction of a bridge pier monolith. In addition to saving time and materials through form reuse, contractor got best use out of other equipment.

"PLAN YOUR FORMS in detail for each job," has been recognized as sound advice by construction management. The economics of increased material and labor costs necessitate maximum reuse of material; assembly-line procedure in building, erecting and stripping forms, and faster placement to obtain reasonable concrete costs.

Experienced contractors have told us that they cannot make satisfactory profits without planning their formwork. Figs. 1 and 2 illustrate typical planned form panels. The planning team ordinarily includes the engineer, the superintendent and the carpenter foreman.

Outstanding examples of this are the New York City multi-story housing projects, where bidding competition is keen. Contractors find it necessary to prepare their own concrete and form drawings so that form work and procedure is thought out before the various trades are on the job. This eliminates practically all field fitting and confusion due to misinter-pretation of plans by the foreman.

The type of structure and how it is broken down into individual pours is the first key to form planning. In heavy construction, monoliths are usually shown on the plan and often can be revised, with the design engineer's approval, for better form economy and procedure without altering the structural requirements. In general, forms can be planned better when lifts are maintained at uniform heights and when monoliths contain enough concrete to provide a repre-

(Continued on page 111)

The Engineer's Report

CASE HISTORY

RPM Delo Oils

Bagdad Copper Corp., Bagdad, Orizona

Biggest truck in the world uses RPM DELO



246,000 POUNDS TOTAL LOAD, 48 tons of truck and 75 tons load, are hauled out of the Bagdad Copper Corp.'s ore pit at Bagdad, Arizona, by the two 350 h.p. supercharged diesels in this unit. RPM DELO Special Lubricating Oil is used in the engines as specified by Mr. Ernest Dickie, General Manager of Bagdad, on the basis of his years of experience with RPM DELO Oils in many other heavy-duty engines.

The big truck, described as the largest in the world, was designed by Mr. Dickie and engineers of Dart Truck Co., builders. Power is transmitted through 3-stage torque converters. All controls are powered.

FREE FOLDER tells you about all the RPM DELO Oils and how they meet every heavy-duty engine condition. Write or call for it today.

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How RPM DELO Oils reduce wear, corrosion, oxidation in all heavy-duty engines



- A. Contain special additives that provide metal-adhesion qualities...protect parts whether hot or cold, running or idle.
- B. Anti-oxidant resists deterioration of oil and formation of lacquer ... prevents ring sticking. Detergent keeps parts clean...helps prevent piston scuffing.
- C. Special compounds stop corrosion of any bearing metal and foaming in crankcase.

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GRIFFIN WELLPOINT KU

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United States Testing Company, Inc.

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REPORT

NUMBER E-9687

June 8, 1954

Griffin Wellpoint Corp. 881 East 141st Street New York 54, New York Client

Subject: Comparative Flow Efficiency Test on five brands of Wellpoints

Following is a summary of the test we conducted comparing the performance efficiency of wellpoints manufactured by Griffin Wellpoint Corporation, with those of four competitive brands.

Our procedure was to pump water from a reservoir through each wellpoint into a calibrated tank. The rate of flow through the wellpoint determined the relative efficiency. Samples were furnished and identified by the client. and identified by the client.

The results are tabulated below:

The results are	Cabuz			Volume	Gallons
	Vacuum	Pump Speed RPM	Sec.	Gallons 100	Per Min.
	1n. 25	1625		100	82.6
Griffin	25	1663	72.5	100	82.6
Wellpoint A	25	1650	72.5	C 12 3 10	46.5
Wellpoint B		1700	129.0	100	40.5
Wellpoint C	28	1706	148.1	100	40.7
Wellpoint D	28	1700		Criffin	Wellpoint

From these results it may be concluded that the Griffin Wellpoint yields more water than the other brands tested.

All 5 lead-Ing makes of self-jetting wellpoints Included in this test. **Full Report** avallable for inspection, on request.

Page 1 of 1 Marager, Engr. Div.

Company, Inc. United States Testing

6 11AR1-8-88-38

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Dewatering and Soil Stabilization

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sentative pour with equipment available. It is desirable also to break down the pours for maximum possible reuse of forms without alteration. On a high pier job over the Connecticut River, the design engineer permitted change in lift heights, making them uniform from the top of the structure down, inasmuch as this did not affect the structural design of the piers in any way. The change permitted the contractor to use identical panels on all piers above certain elevations without changes and resulted in substantial savings in form costs. On smaller structures, construction joints serve to break up the pours within limits of the specifications and good judgment for a day's pour.

After lining up the job as to pouring procedure, there are several other factors to consider for best planning and design of forms.

Specifications

Specifications govern form requirements in many ways. Particular wall finishes may be called for, such as board mark, smooth plywood, no-grain, checkerboard panel arrangements, and others. The use and spacings of tie and anchorage requirements may be restricted. Setback of tie metal is usually covered, as well as provisions for the length of time forms must be left in place—and curing procedures.

Special requirements on form design, such as tolerances or minimum form pressures, may be required. Analysis of specifications for factors influencing form work is necessary.

The Concrete Control Division of the Corps of Engineers under Chief J. R. Gilbert has recently issued a preliminary manual for civil works construction entitled, "Standard Practice for Concrete with Guide Specifications for Concrete," which includes reference to form construction. This work was prepared in the interest of guiding contractors in U.S. Engineer requirements for heavy construction and developing reasonable and acceptable procedures. As a matter of interest and to demonstrate the use of specifications, Tables 1, 2 and 3, are excerpted from the Engineers' Manual covering tolerances for reinforced concrete construction, mass concrete structures and tunnel linings and conduits.

An excerpt on removal of forms, also pertinent to this subject, reads as follows:

(Continued on page 114)

TABLE 1

Construction Tolerances for Reinforced Concrete Construction

(1)) Variation from the plumb:		
	a. In the lines and surfaces of columns, piers, walls and in arrises	In 10 ft In any story or 20 ft maximum In 40 ft or more	
	 For exposed corner columns, control- joint grooves, and other conspicuous lines. 	In any bay or 20 ft maximum In 40 ft or more	1/4 in 1/2 in
(2)	Variation from the level or from the grades indicated on the drawings:		
	a. In floors, ceilings, beam soffits, and in arrises.	In 10 ft In any bay or 20 ft maximum In 40 ft or more	
	 For exposed lintels, sills, and other conspicuous lines. 	In any bay or 20 ft maximum	
(3)	Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions.	In any bay or 20 ft maximum In 40 ft or more	
(4)	Variation in the sizes and locations of sleeves, floor openings, and wall openings.		¼ in.
(5)	Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls.	Minus	
(6)	Footings: a. Variation of dimensions in plan.	Minus	
	b. Misplacement or eccentricity.	2% of the footing width in the dimisplacement but not more than	irection of
	c. Reduction in thickness.	Minus specified	
(7)	Variation in steps: a. In a flight of stairs.	Rise	
	b. In consecutive steps.	Rise Tread	

TABLE 2

Construction Tolerances for Mass Concrete Structures

/33	AII			
(1)		structures: Variation of the constructed linear outline from established position in plan.	In 20 ft	1/2 in 3/4 in
	b.	Variations of dimensions to individual	la 80 ft or more1	
		structure features from established positions.	In buried construction, twice the amounts.	above
(2)	a.	Variation from the plumb, from the	In 10 ft	
		specified batter, or from the curved	In 20 ft	
		surfaces of all structures, including the lines and surfaces of columns, walls, piers, buttresses, arch sections, vertical joint grooves, and visible arrises.	In 40 ft In buried construction, twice the amounts.	above
	Ь.	Variation from the level or from the	In 10 ft	1/4 in.
		grades indicated on the drawings in		1/2 in.
		slabs, beams, soffits, horizontal joint grooves, and visible arrises.	In buried construction, twice the amounts.	obove
(3)	σ.	Variation in cross sectional dimen- sions of columns, beams, buttresses, piers, and similar members.	Minus Plus	¼ in. ½ in.
	Ь.	Variation in the thickness of slabs.	Minus	1/4 in.
		walls, arch sections, and similar mem- bers.	Plus	1/2 in.



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most powerful tractor of its type!

Two husky overhead valve Super 55 engines to choose from! Pick the fuel that fits your needs the best, cuts your costs the most.

The diesel is a full diesel—starts and runs on diesel fuel alone. An engine rugged and responsive, and one that takes little upkeep. And this diesel is weatherproof—easy to start even after long layups.

eatherproof—easy to start even after long layups. Pick the gasoline, and you get an engine with a compression ratio of 7.0 to 1—highest for an industrial tractor! Extra high compression means greater power on less fuel, better performance on every job.

See this new Oliver, drive it yourself! Check its power, handling qualities and many attachments. Check, too, its many standard features—6 forward speeds, double-disc brakes, ball-type steering. See your Oliver Industrial Distributor, soon!



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a complete line of industrial wheel and crawler tractors







The public works department of a large Southern county had run into a serious problem with their road building equipment.

Sinclair Representative J. E. Gilmer reports, "The oil being used was high-priced but certainly not up to the requirements of this type of equipment. Bearing wear was high and carbon and sludge were found in all of the engines. There was definite need of an oil with better oxidation stability under extreme operating temperatures and heavy load conditions.

Mr. Gilmer continues, "I suggested Sinclair SUPER TENOL®, pointing out that this oil contains special additives to clean engines and keep them free of carbon and sludge. Moreover, its better oxidation stability helps prevent corrosive wear of bearings and rings.

"The county warden gave SUPER TENOL a test — the results of which proved my suggestion was right. SUPER TENOL gave far better service than the more expensive oil previously used. Of course SUPER TENOL is now used exclusively in all of this county's road building equipment."

Why not give a Sinclair Lubrication Engineer the chance to help solve your lubrication problems.

There's no obligation. Contact your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N.Y.



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Table 2 . . . Continued

- (4) Footings for columns, piers, walls, but-tresses, and similar members:
 a. Variation of dimension in plan.
 - b. Misplacement or eccentricity.
 - c. Reduction in thickness.
- (5) Sills and side walls for radial gates and similar watertight joints:

 a. Variation from the plumb and level.

Minus 2% of footing width in the direction of misplacement but not more than............ 2 in. 5% of specified thickness

> not greater than a rate of 1/2 in. in 10 ft

> > 1/2 of 1%

TABLE 3

Construction Tolerances for Tunnel Linings and Conduits

Departure from established alignment or from established grade. (1) a. Free-flow tunnels and conduits 1 in. High-velocity tunnels and conduits. 1/2 in. b. Variation in thickness, at any point. **Tunnel Lining** minus 0 Conduits minus 21/2% or 1/4 in., whichever is greater plus 5% or 1/2 in., Conduits whichever is greater

Removal. Forms shall not be removed without approval, and all removal shall be accomplished in a manner which will prevent injury to the concrete. Forms shall not be removed before the expiration of the minimum time indicated below, except as otherwise directed or specifically authorized.

c. Variation from inside dimensions.

Arches, including gallery and		
conduit roofs	.144	h
Beams and deck-type slabs.	.144	
Columns and walls (lifts 15 f	t	
and under)	. 24	4
Columns and walls (lifts over		
15 ft)	. 48	4
Mass concrete (face)	. 36	A
Mass concrete (bulkhead)		6
Tunnel lining		6
Tunnel lining bulkheads		6
Conduit in open cut		61

"When conditions on the work

are such as to justify the requirement, forms will be required to remain in place for longer periods."

Materials and Equipment

Materials and equipment available will at times influence form planning, although it is generally a mistake to use the wrong materials for a structure just because they are on hand. Equipment available will determine the amount of concrete that can be placed per day. The presence of heavy equipment, such as cranes, on a job for other purposes may permit the use of large or heavy form panels at little or no extra cost.

· Reuse of materials is important in selecting more expensive or more durable form materials. For (Continued on page 116)

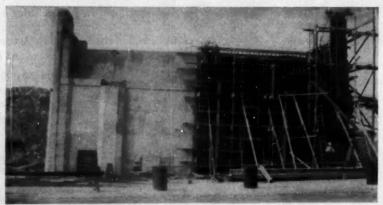
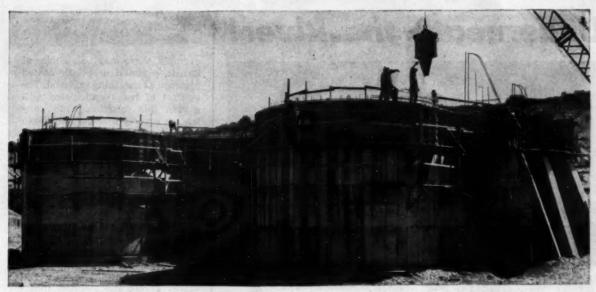


Fig. 4... REUSABLE MONOLITH FORMS in place for a partial structure with adjacent monolith already poured. Maximum form reuse often puts contractor in favorable bidding



STORAGE WALLS to hold sand and gravel, designed and engineered by Kaiser Engineering Co. Symons Pre-Fab Fir Plywood Forms were called upon for the work because they could

be prefabricated to fit the need and on the basis of savings in time and money. Butler Construction & Engineering Co. Sectile, Washington, is the contractor.

COST SAVINGS SELL SYMONS FIR PLYWOOD FORMS FOR 40 FT. HIGH "S" CURVED CONCRETE STORAGE WALLS

An unusual concrete construction job in Steilacoom City, Washington, involved the erection of two sharply curving free-standing concrete walls 40 feet high and 15 inches thick. The curves are shaped to a radius of 15 feet 6 inches. One wall is 190 feet long and the other is 400 feet long. They face each other across a space of 200 feet.

The curving surface of the walls posed a serious problem in forming. This was solved by the use of Symons Pre-Fab Fir Plywood Forms.

Most of the form panels were 2 x 6 feet with 34 inch exterior *Plyform* faces framed on the edges with 2 x 4's and reinforced with steel cross members spaced 12 inches O.C. The job also

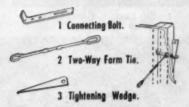
required a number of filler panels 20 inches by 6 feet in which the plywood facing on each side extended past the framing $1\frac{1}{8}$ inches, making it possible for the edges of the form to butt closely on the outside surface of the curves.

Symons Engineering and Customer Service also play an important role in projects where forming is a serious problem. The Symons Engineering Staff will furnish complete form layouts and job cost sheets on the form work—at no charge to the contractor. This service enables the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Symons fieldmen give regular on-the-job service. First, by on-the-job recommendations of forms and hardware needed. Second,

by showing the workmen how to set up the forms efficiently. Third, by making special deliveries when last minute problems arise.

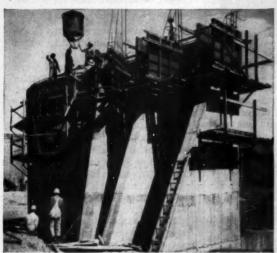
Symons Forming System includes just 3 pieces. TWO WAY FORM TIE which holds form securely to the required wall thickness without washers, spreaders or walers. Tie-ends are broken back within wall by a half-twist after forms are removed. TIGHTEN-ING WEDGE is inserted through the slot in the connecting bolt and pulls form sides tightly together. CONNECTING BOLT which is slotted passes through edges of adjacent forms and tie loop.

JUST 3 PIECES



The Symons Forms are available on a Rental-Purchase Plan which offers contractors the opportunity to use the Symons Forming System on a rental basis . . . with all rental charges to apply on the purchase price, during a 60-day period.

Contractors throughout the country have tried this plan and like it. Send in your request for the complete facts no charge or obligation.



Abutment supporting ends of the 190-foot concrete sand and storage wall. Photo shows Symons Fir Plywood Forms being used for fourth pour on 40-foot high installation.

	LAMP & MFG. CO. y Ave., Chicago 3, III. Dept. J-4
Please send regarding:	catalog and information
	Shores Column Clamps
Name	
Firm Name	
Address	
City	Zone State

Underneath the River! CONCRETE ...



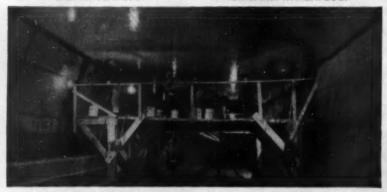
THORITE Patching Mortar Crew at work in Air Tunnel under East River, New York.



Sealing Leaks in Traffic Tunnel with WATERPLUG.



Sealing Drain Pipe Channels in Tunnel with WATERPLUG.



WATERPLUG Crew at work, before placing of tile lining, Battery Tunnels, East River, New York.

On many of the largest underground projects in the Americas and in foreign countries WATERPLUG solves, for the contractor, his water problems. The job may be small or it may be large, the results are the some Successful.



Continued from page 114

example, there may be a choice of boards, plywood or plastic-coated plywood as sheathing material. The amount of reuse anticipated will govern this selection. One contractor reports that he can obtain twice as many uses (40 to 50) with plastic-coated plywood as with regular form plywood (20 to 30), and that plastic-coated plywood provides flat surfaces for exposed ceilings, walls and columns without grain marks.

It is common practice in foundation work for contractors to reverse their plywood panels on panel frames to get use from both plywood surfaces before discarding the material. Framing members of higher grades and qualities sometimes pay off in straightness and uniformity.

- · Handling of forms affects their design. Hand-handled units require the lightest materials possible and small panels. Many contractors use light spruce, dressed on two edges, for hand-handled panels to get the benefit of extra strength and lightness. Crane-handled units must be constructed more solidly and of heavier members. The availability of equipment and labor and the cost of both affect this planning.
- · Method of placing concrete affects design. Fast pouring of concrete is essential to cut down overhead and operating time and forms must be planned to "take it." Other considerations include clear space between ties and anchors for chutes, trucks or buckets; also impact loads as from a swinging bucket, or support loads for chutes, conveyors and pipes.
- The class of work will govern the care and precision with which forms must be constructed and handled. Forms for exposed work require more consideration than forms for work which is backfilled. In our later tables, we will refer further to classes of formwork with respect to design and with respect to wall work, slab work and heavy falsework as requiring different design factors. Specifications and type of work govern in most instances.

Some contractors on light foundation forms operate on the basis of calculated risk in that they use a minimum material, loading framing members and ties beyond normal capacity and putting up with the attendant deflection and accept-

(Continued on page 119)

Your old saw worth



on the new 77 and 825 Super Duty SKIL SAWS

Power increased up to 107%!
Blade speed increased up to 40%!
Lighter weight, greater performance
than ever before!

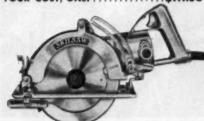
The SKIL 30th anniversary special offer's still good till November 15th—so better act now! Yes—regardless of the age, brand, or condition of your old portable electric saw, it's worth \$22.50 to you toward the purchase of the newest and finest in high-speed, high-power SKIL Saws.

Just read about these 2 great new SKIL Saws—see them—try them. See your SKIL distributor or mail coupon now!

NEW SKIL SAW 77 (71/4" Blade)—Speed increased 40% to 4500 r.p.m. and weight cut to 15½ lbs. Power output boosted 100%. Depth of cut 2% inches—Bevel cuts 2" dressed lumber at 45°. Most popular SKIL Saw for all-round carpentry—the standard for general construction. Power to cut wet lumber or tough materials such as metal, stone, compositions.

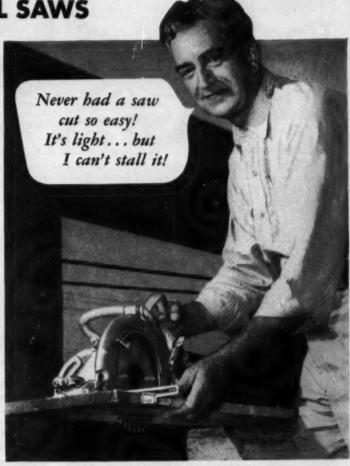
NEW SKIL SAW 825 (81/4" Blade)—Speed boosted 34% to 4000 r.p.m. and weight reduced to 161/2 lbs. Power output increased 107%. Depth of cur 2% inches. Bevel cuts 2" rough lumber at 45°. A powerful, heavy duty saw, ideal for use on either residential or commercial construction. Powered to easily cut 2" rough lumber—wet or dry—as well as many other tough and resistant materials.

Price, New Model 825 less case ... \$134.00
Trade-in credit 22.50
YOUR COST, ONLY \$111.50



NEW SKIL 825 (81/4" Blade) NEW SKIL 77 (71/4" Blade)

Newest, finest all-round portable saws—at their price on the market today!



Telescoping Guard

All Ball Bearing

In-Line Rear Handle
Full Size Top Handle

Blade Visibility

New Foot Design
Sawdust Blower

Satin Finish

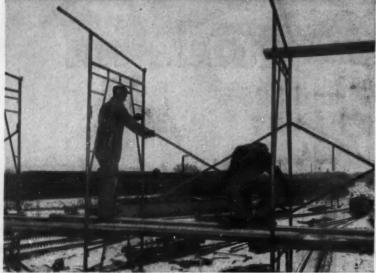
Worm Drive



Made only by SXIL Corporation, formerly SXILSAW, Inc. 1933 Eislen Armon, Chicago SA, Milnois 2001 Dundes Street West, Toronto B, Ontario Factory Branches in All Leading Cilies

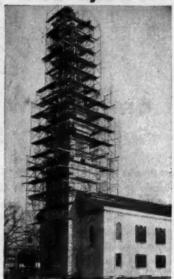
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Scaffolding News in Pictures

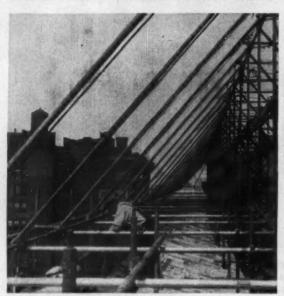


TRACKS BELOW—Crossbraces are secured to frames by fast, gravity-action "Slideloks" as erectors put up "Trouble Saver"® Sectional Steel Scaffolding for masonry work on the New York Central's new diesel repair shops in Buffelo, N. Y. Seigfried Construction Co. rented 300 6'6" "Trouble Saver" frames to speed this job. Overhead protection attachments are used so that scaffold could be covered and heated.

... by PS Co.



TAILORED TO FIT—This 160 ft. high, 260-frame "Trouble Saver" Scaffold puts men close to repair work on First Congregational Church, West Haven, Conn. Patterson Construction Co., New Haven, is the contractor.



BUILT FROM THE TOP DOWN—For cornice removal on an 18-story building at 30 Union Square West, New York, J. H. Taylor Construction Co. uses this outrigger "TubeLox" Scaffold, cantilevered 6 ft. beyond the 6 ft. high parapet wall to solve the problem. Steel cables are anchored to the roof, then run up over the "TubeLox" complex "towers" at right which support a two-level hanging "TubeLox" Scaffold below the cornice.

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BOTH WAYS AT ONCE—Every part of the job is easily reached by the 160 masons on the Pruitt Housing Project in St. Louis, Mo. 276 5-ft. wide "Gold Medal" Scaffolding Machines are used by I. E. Millstone, general contractor, to provide quick adjustment to proper working heights as the job progresses. Overhead protection attachments support planking.



TRESTLES IN WALL—Laying up brick on South Euclid, Ohio job Mason Contractor L. Hubbard uses new "Trouble Saver" Adjustable 5 ft. wide Putlog Trestles. Patent Scaffolding Co. offers a complete engineering service. To buy or rent PS Scaffolding, see the Yellow Pages in your phone book for the neerest PS Co. office or representative handling "Gold Medal" Scaffolds.

CONCRETE . . .

Continued from page 116

ing an occasional failure as routine, compensated for by material cost savings. On responsible work and particularly on heavy construction, design engineers step in and insist on reasonable safety factors.

At one time, there was a disposition to feel that heavy structures, because of mass concrete, did not present a pressure problem and almost anything would hold the forms. This thinking is erroneous, as modern heavy construction is poured at rates of thousands of cubic yards per day so that the concrete capacity can in itself cause pressures comparable to those in thinner walls.

Furthermore, the requirement for alignment is precise, and the penalty for a lost pour involving hundreds of yards of concrete is too severe to permit gambling with safety factors and the safety of working personnel.

- Form Types are developed from analyses of plans for adaptability of panel systems, with consideration given to architectural finish, extent of reuse of panels, materials available and cost of erection. When conditions warrant the use of panels, it is good practice to space tie and anchorage units symmetrically relative to panel sizes. eliminating redrilling or reworking of panels and permitting a standard assembly procedure. Built-inplace forms are practical where reuse is at a minimum and contours are irregular.
- Form stripping procedure, to eliminate damage during removal, is an important consideration and must be studied during form planning with reference to surface contours and special conditions.
- Concrete pressures must be assumed when designing formwork. In practical design there is need for a degree of safety in the forecasting of concrete pressure load values, due to variable conditions on jobs. Contributing factors such as vibration, swelling of form lumber, or lack of flexibility in rigid form members, often operate to increase the apparent actual pressure load over ideal fluid pressure test conditions.

There is some difference of opinion on concrete pressures, and it is necessary to "take the bull by the horns" and settle on assumptions for average conditions which (Continued on page 122)



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Easy Application Gives Reterded Detora
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No clutter or confusion at paving site. Premixed concrete delivered by Dumpcretes ready for placing.

PAVING ON THE OHIO TURNPIKE

Non-agitated Hauling Meets Every Test

On sections C-2 and C-3 of the Ohio Turnpike there's no clutter at the paving site. No paver, no water trucks, no men to run them.

Just spreaders and finishers, plus a Dumpcrete or two discharging 4 yards of premixed concrete in 60 seconds.

The automatic central mixing plant is midway on the 10-mile job. Three men run it. 14 Dumpcretes haul its 95,000 yd. production.

Here's the bonus. The single plant supplies concrete for bridges, culverts, walls and widening as well as paving.

"It's an efficient, high-production operation. We like it," says D. W. Winkelman, contractor. This method cuts costs on small jobs, too.

It's approved by 25 state highway departments.
Write for bulletins today.



Central mixing plant located midway on lob.

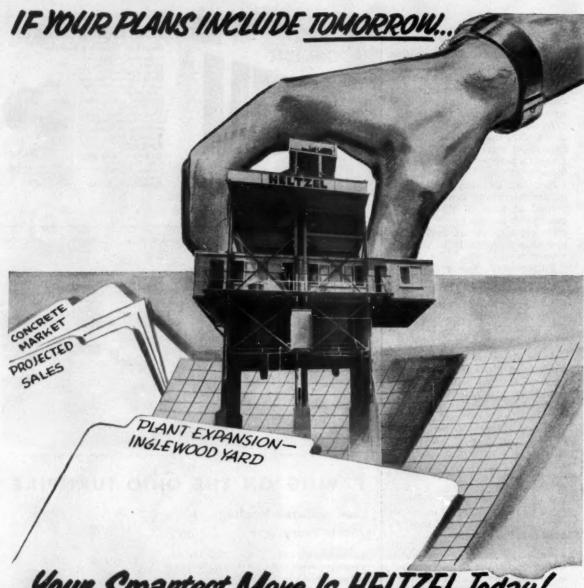


Slump, cylinder, beam and air test (above) all O.K.

701 Ta	acturin ibott B	g Division, Maxor wilding, Dayton 2	Const	ruction Co., Inc.
Send Me		Paving on the Ohio Turnpike		8 Ways to Set Up For Control Mixing
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Fastest from plant to pour



... Your Smartest More Is HELTZEL Today!

Designed to meet future requirements

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three good reasons why it's smart business to think of HELTZEL when you're
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For when you purchase HELTZEL you're making a sound investment in the future.

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The HELTZEL STEEL FORM & IRON CO., WARREN, OHIO



Thermoid Hose designed specifically for construction jobs

Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. Here are three that are ideal for rugged quarrying and construction work:

THERMOFLEX—Mandrel-built air hose for extreme service and direct connection to compressors. Smooth, black abrasion-resistant cover.

VERSICON—Most versatile hose ever developed. Handles air, water, oil, gasoline, dilute acids and gases. Ideal for use with air-operated tools.

#325 CL SUCTION HOSE—Heavy duty wrapped hose reinforced with rugged wire enclosed in a woven cord carcass. Long wearing tube and cover resists weather and abrasion. Can be restored to shape after crushing.

Thermoid research is responsible for new, better hose construction which makes Thermoid Hose more durable...easier to handle. Quarrying and construction work also demands the best in Conveyor Belting and Multi-V Belts. Ask your Thermoid Distributor for complete information on all these Thermoid Products. Or if you prefer, write direct.



Conveyor & Elevator Belting - Transmission Belting F.H.P. & Multiple V-Belts - Wrapped & Molded Hose



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COMMENT

from the BUTLER ENGINEER

... of orchids to the Corps of Engineers ... and automation

A very forward-looking and alert Corps of Engineers has kept the desk lights burning for many weary nights to bring forth definite and definitive spec's covering the production of Ready Mixed Concrete. This move, greatly needed, is of vast importance to the Ready Mixed Industry for it provides absolute clarification of what kind of plant or what kind of job as a basis for bidding on civilian or military work supervised by the Corps.

Automation of Ready Mixed plants is going to be required in certain contract classifications. Your Butler Engineer promises that Butler Bin will help you meet the new specifications by revising your existing plant... and by engineering new plants to the requirements.

At any rate, orchids and a sweeping bow to the Corps.

Speaking of plant automation, and this applies to Road Builders as well as Ready Mixed plant owners, I often wonder what your batch operator thinks when he goes home with protesting muscles, aching back and tired mind and, over the suds (soap, of course) contemplates what is provided his wife in her household work. Consider: automatic dishwasher, automatic heating, automatic toaster, automatic refrigerator defrosting, automatic cooking, automatic water heater, even automatic music to wake up. And he drives a car with automatic shift and automatic dimmers on the lights.

The moral? Plant automation pays . . . in higher production . . . better quality . . . greater profits . . . happier owners . . . happier operators . . . happier customers.

Yours - automatically,

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

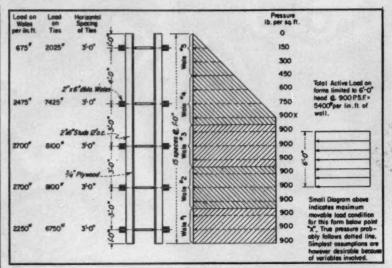


Fig. 5...FULL HEAD PRESSURE diagram for a plumb wall form as sketched—for a unit concrete pressure of 100 psf per ft of height. Wall is assumed 18 in. thick, 15 ft high and filled with natural cement concrete, placed within 2 hr.

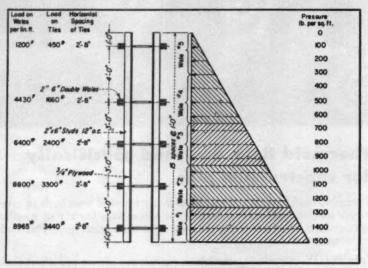


Fig. 6...LIMITED HEAD PRESSURE diagram. Form designed for a 6-ft maximum rise per hr at 70 to 80 deg F., with portland cement concrete and temporary internal vibration. Class of work will govern the care and precision required in making and handling forms.

have proved workable in use, rather than try to outguess the vagaries of each particular pour. Pressure basically is influenced by type of mix, type of concrete, setting time and temperature. For practical purposes, we assume two kinds of concrete pressure diagrams, for full head or limited head pressure assumptions.

• Full liquid head pressure conditions result when concrete is poured full height within a period of time normally required for its initial set. Fig. 5 diagrams a full head condition. No relief of pressure due to setting can be assumed. The full head analysis is utilized

for fast pours such as columns, buttresses and small walls, or for larger walls when the concrete is of such a nature that it does not take a set in a normal time.

Slow set of concrete can be expected where natural cement is used, low temperature pours under 40° F., and when set-retarding admixtures are used with portland cement. The State of Connecticut utilizes natural cement to a great extent in bridge work, and specifications provide for form design based on fluid pressure of the full head of the structure, computed at 85 psf per ft of height.

Other unit pressures commonly used for full head pressure are 100

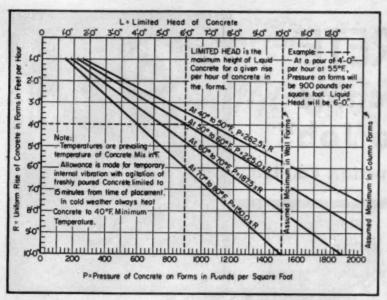


Fig. 7...LIMITED HEAD PRESSURE that can be anticipated at different temperatures and different rates of rise per hr. Setting times assumed as I hr at 70 to 80 deg F; 11/4hr at 60 to 70 deg F; 11/2 hr at 50 to 60 deg F; and 13/4 hr at 40 to 50 deg F.

psf and 125 psf per ft of height, although the latter figure is overly conservative for full head analysis. Based on our experience, we feel that maximum pressures of concrete in a form, regardless of rate of pour, do not exceed 1,500 psf maximum for walls where concrete is "placed" at 2,000 psf for the maximum for heavy columns where concrete is "dumped."

 Limited head pressures analysis is the other method. It has been used for regular portland cement concrete for a number of years and proved reliable.

In our analysis, we use 150 lb per cu ft as the pressure weight of concrete and, for straight portland cement, we utilize a setting time of one hour at 70 to 80° F (P = 150 × R); 11/4 hr at 60 to 70° F $(P = 187.5 \times R)$; 1% hr at 40 to $50^{\circ} \text{ F (P} = 222.5 \times \text{R)}$. The formulas shown in parentheses after each setting time are simple computations where (P) is the maximum pressure to be expected at the temperatures given when (R), the rise per hour of concrete in the forms, is multiplied by the constants shown for the various temperatures. Constants 'are determined simply by multiplying the unit pressure of 150 psf by the setting time. Fig. 6, Pressure Diagram shows what happens with a limited head.

Fig. 7 summarizes in graph form the pressure which can be antici-

pated with limited head at different temperatures and different rates of rise per hr of concrete in the forms. The assumption for limited head is simply that the concrete sets, eliminating additional load, and the active pressure on the forms can be figured as a movable load, equivalent in height and effect to maximum pressure load at the limited head. Limited head assumptions for portland cement concrete have proved reliable in ordinary formwork and have been substantiated further by rather spectacular continuous pours of extremely high structures.

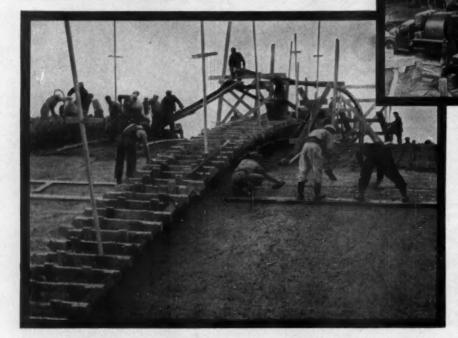
An interesting case in point was reported to us by Edward E. White of Spencer, White & Prentis, on an experimental continuous pour of a dam pier at Alton, Ill. several years ago. The pier was 43 ft high, 60 ft long and 8 ft thick. Concrete was poured continuously at a rise of 11/2 to 2 ft per hr to full height at a temperature of 40 to 50 deg F. Loads on seven lines of 14-in. form bolts were checked by extensometer readings during the pour, and the maximum concrete pressure was found not to exceed 600 psf on the forms at any time. Under our analysis, this would indicate a limited head of 4 ft for a continuous pour 43 ft high under these conditions.

The eleventh article of this series will appear in the November issue.



"PUMPCRETE" Only Machine Able to Do Job"

says Sterling Construction Co., Ltd.



This Model 160 Rex Pumpcrete placed all the concrete for both hangars recently completed at the busy North Bay Airport in Ontario—a total of 30,000 cubic yards.

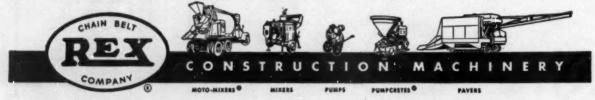
Piped through the roof, concrete was alternately supplied to pouring and finishing crews on each side. Each pour of about 225 cubic yards was completed in 15 minutes, change-over required less than a minute.

With all approaches to the building site barred by excavations and other construction work, only Pumpcrete was able to place successfully all the concrete for the two hangars recently completed at the busy North Bay Airport in Ontario. A single Model 160 Pumpcrete placed concrete for walls and cambered roof for both buildings, totalling 30,000 cubic yards of concrete with ¾-inch aggregate and mix rated at 4000 p.s.i.

Flexibility of Pumpcrete placement by pipeline enabled the contractor to make valuable savings in time on roof-pouring operations. Pumpcrete pipeline was run straight up to crown of roof. Pipe was then laid from crown to bottom on both sides of roof so that pour could be made by alternating from side to side. This equalized the load on forms and enabled the use of two pouring and finishing crews simultaneously.

On this job...on any job...these are the typical advantages of Pumpcrete that can make important savings for you. In the words of the foreman on this job, "I am convinced that this machine will pay for itself in savings."

Why not have your local Rex Distributor show you how simple it is to place concrete by pipeline on your next job. Chain Belt Company, 4664 West Greenfield Ave., Milwaukee 1, Wisconsin.



TROUBLE-FREE SERVICE around the clock from Tiger Brand Drag Rope

The Right
Wire Rope
will do
the trick!





ASSURE YOURSELF of good service from your wire ropes—consult an American Wire Rope Engineer regularly.

One of the largest coal companies in Pennsylvania gets excellent service from Tiger Brand Wire Rope. On this big dragline, for example, 21/4" Tiger Brand Drag Rope lasts for 8 to 12 weeks, and 13/8" Tiger Brand Hoist Rope lasts 4 to 6 months. This is good service, because these ropes work 24 hours a day, 6 days a week, every week of the year.

As a result of consistently good service records like these, many such operators use Tiger Brand Wire Rope exclusively on all their excavating machinery.

Like hundreds of other companies that do a lot of excavating, you will find that once you start using Tiger Brand Wire Rope, you keep down rope costs, keep down rope trouble, and keep on using Tiger Brand.

For a list of Tiger Brand Wire Ropes and the jobs each one can do best, send the coupon.

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WELDED WIRE FABRIC is embedded automatically into 2-in. thick binder course of asphaltic concrete during resurfacing of a

stretch of the Pennsylvania Turnpike. Two Barber-Greene pavers spread mix on 24-ft lane, with traffic diverted to far side.



PAVER DESIGN is not affected. Only addition to smooth out and told down wire fabric ahead of hot mix auger, are steel rails between crawlers that slide easily across the wire.

Resurfaced Turnpike Has Wire in Asphalt

TO PREVENT CRACKING in a stretch of bituminous concrete resurfacing on the Pennsylvania Turnpike, welded wire fabric is placed over all joints and breaks in the old concrete pavement.

Latrobe Road Construction Co. is applying a 2-in. binder course over the fabric, and topping that with a 1-in. surface course. The 22-mi resurfacing job is the largest of its kind ever let by the Turnpike Commission. It is also the largest use yet of wire fabric in asphalt.

The operation consists first of cleaning the old sur-(Continued on page 129)







9:40 AM — A Caterpillar D.7 is ready for its daily grease job and maintenance check. Hoses reach from the Partable Service Station. Fresh, clean lubricant is applied with finger-tip control. Time: 12 minutes.

9:53 AM — This LeTourneau Carry-All is serviced fast. Major bearings, vital lubrication points, all serviced and ready to go in just 7 minutes. With NO time lost in traveling to and from a central grease shop!

10:01 AM — The operator is seen filling crankcase to proper level on this Motor Grader. Meter shows exact amount of oil pumped—no waste. This equipment is greased and checked in only 22 minutes!

Beat impossible time schedules,

lick the toughest lubrication maintenance problems!

Triangle Construction depends on Alemite "on-the-go" lubrication to protect vital rigs!

Faced with the problem of meeting almost impossible schedules on job after job involving heavy earthmoving equipment, the Triangle Construction Company of Kankakee, Illinois, consulted their Alemite suppliers, the General Equipment Company. On their recommendation this Alemite Portable Service Station was assembled.

Standard Alemite equipment was mounted on a 2½-ton truck. Thus, the service station went right to the equipment. Results were immediate and impressive! First saving was in time. Rigs paused only momentarily for service and routine maintenance, and time waste in going to and from the grease shop was completely eliminated.

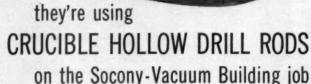
Even more important was the saving in equipment downtime which became apparent with proper, regular lubrication-protection. There was less machine wear and maintenance costs dropped sharply.

Your Alemite representative can "tailor" a portable service station to exactly fit your needs. Show you how you too can save these three ways!

- 1. Save Time! By bringing complete power lubrication right to the equipment on the job safely, efficiently!
- 2. Save Money! By cutting expensive lubrication downtime —increasing output of both men and machines!
- 3. Save Equipment! By greatly reducing the possibility of costly, time-consuming bearing failure and excessive wear!







Across the street from New York City's Chrysler Building, the Slattery Contracting Company is busy moving a city block of earth and hard rock. They're preparing the way for construction of the new 42-story Socony-Vacuum office building.

It's another tough job on which thousands of tons of rock must be moved...and since Crucible Hollow Drill Rods are first choice for tough jobs, you'll find them being used extensively on this one. Construction men know from experience they can rely on Crucible Hollow Drill Rods for top performance.

That's because Crucible makes its hollow drill rods to tool steel standards. That means you'll have fewer broken rods, greater operating efficiency...lower cost per foot of hole drilled...when you specify Crucible Hollow Drill Rods.



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54 years of Fine steelmaking

HOLLOW DRILL ROD

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REX HIGH SPEED . TOOL . REZISTAL STAINLESS . MAX-EL . ALLOY . SPECIAL PURPOSE STEELS

Sanadian Distributor - Railway & Power Engineering Corp., Ltd.



HOG RINGS secure intersecting wires of welded fabric when more than one 7x11½-ft sheet is required across a concrete joint. Loose joining permits creep when temperatures change.



HOLD-DOWN SHOE on paver, outside of tracks, flattens fabric ahead of hot mix. Weighted, hinged shoe is a development of the Latrobe Construction Co., Latrobe, Pa., contractor on the job.

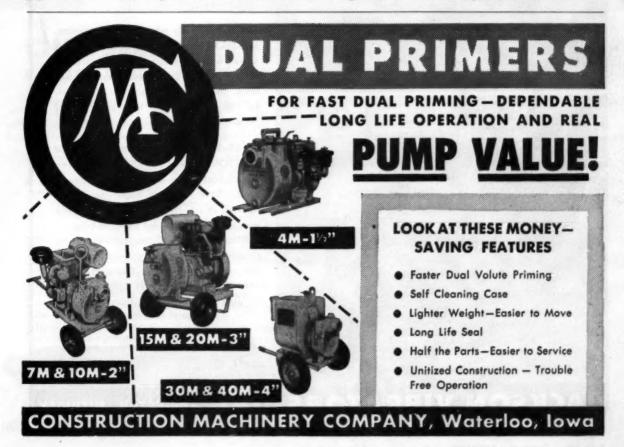
face and cutting the protruding joint material back to level. Ahead of the paving spread, workmen lay 7x11½-ft sheets of fabric where needed. When two or more sheets have to be joined, hog rings are tied around the end wires. This type fastening also provides enough space for the sheets to move when imbedded in the bituminous concrete. Sheets are made of No. 10 gage wire with the longitudinal

wires spaced 6 in. apart and the transverse wires 3 in. apart.

Mix is spread by two Barber-Greene pavers operating in tandem over the 24-ft pavement width. To prevent the fabric from entangling in the paver, two hold-down devices are used. Between the crawlers, four 80-lb railroad rails are suspended by chains under the hopper so that their trailing ends hold the fabric flat against the

pavement just ahead of the conveyor screw. Outside the crawlers on each side of the paver, a spring-connected shoe keeps the fabric in place.

Rolling behind the paver is done with a Galion 3-wheel and two Buffalo-Springfield 2-wheel rollers. Turnpike maintenance forces are building up the shoulders and medial strips to match the level of the new pavement.



Best way to achieve SPECIFIED DENSITY in ROCK, SLAG, SOIL-BOUND MACADAM, GRAVEL

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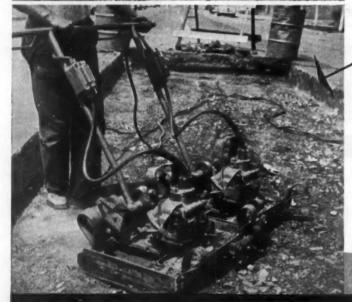
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JAICIKSON VIBRATORY COMPACTORS!

On jobs such as this, soil-bound macadam — 5 inches thick, the JACKSON MULTIPLE COMPACTOR, now more powerful than ever, achieves specified density in JUST ONE PASS. It is equally efficient on rock, or slag base and all other granular soils.

Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in ONE PASS.

Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.



See

your Jackson Distributor or write to us for complete information on these machines.

JACKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

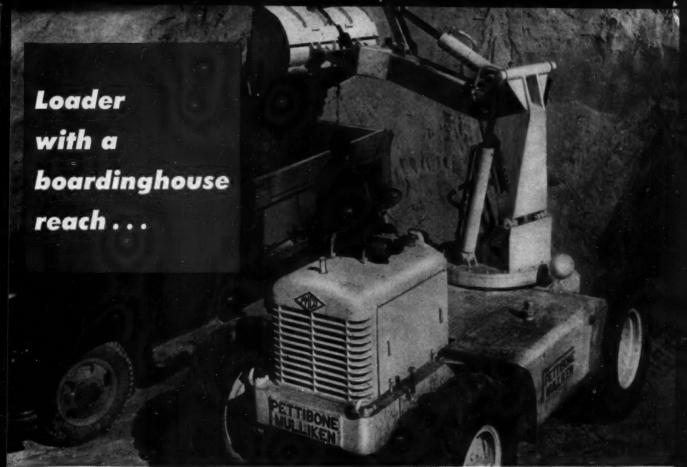


PHOTO COURTESY PETTIBONE MULLINEN CORPORATION, CHICAGO, ILLINON

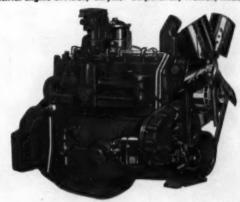
CHRYSLER Industrial Engine and torque converter assure faster handling of tougher jobs

This versatile, highly maneuverable loader goes after work like a stevedore after "seconds." Boom swings through 180°, loads faster, in less space, to the left or right without moving from its short, single working line. Cuts loading time up to 25%. Bucket, fork, tote hook and backfiller blade attachments are interchangeable.

Torque Converter provides extra power for tough going, faster acceleration without necessity of shifting gears or declutching. Furthermore, the Torque Converter eliminates shock loads to the power train . . . thus reduces

Pettibone Mulliken Speed Swing Loaders come in two sizes . . . 34 cubic yard and 1 cubic yard. Both sizes can be supplied with four-wheel drive (like the unit pictured), and four-wheel steer. Chrysler 230 cubic inches displacement Model 30 Industrial Engine drives the 3/4 cubic yard unit, and the 265 cubic inches displacement Model Ind. 16 drives the 1 cubic yard unit. Chrysler Torque Converter connects engine with four-speed transmission, transmits power to boom.

In considering power for your equipment, remember Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. See a Chrysler Industrial Engine dealer or write: Dept. 910. Industrial Engine Division, Chrysler Corporation, Trenton, Mich.



R Industrial Engines

INDUSTRIAL ENGINE DIVISION . CHRYSLER CORPORATION









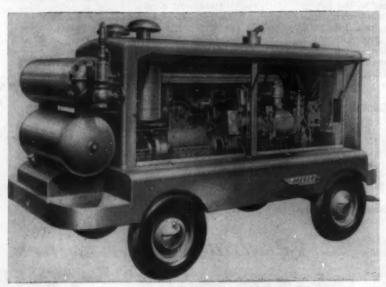




AGRICULTURE . INDUSTRY . CONSTRUCTION . OIL FIELD



Cooler, Steadier Air With...



... Jaeger's Rotor Compressor

STEADY OUTPUT of cooler 100psi air at lower speeds is a combination for high-capacity air compressors that should appeal to every contractor looking for long and trouble-free service on the job.

The Jaeger Machine Co. claims these features in its new 600-ft Roto-Air Plus, a portable, two-stage, sliding-vane type rotary that has a high-pressure discharge air temperature at least 100 deg cooler than found in comparable reciprocating compressors.

This veteran Columbus, Ohio, compressor manufacturer also has trimmed the weight so that the Roto-Air scales approximately 30% less than a piston type of the same capacity. Fueled and ready to run, the machine weighs 9,500 lb. It is powered by a 160-hp General Motors 6-71 diesel.

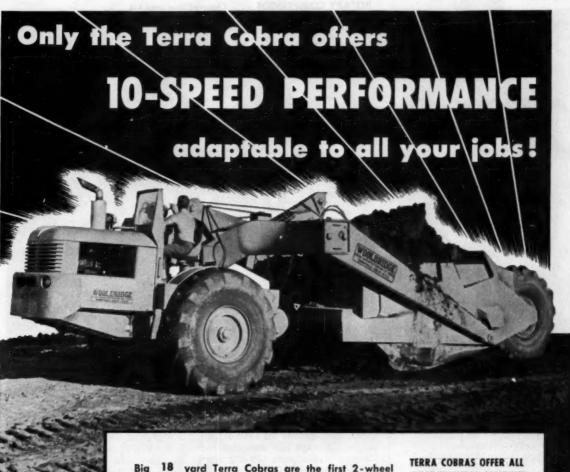
Lubricating oil does extra work in the Roto-Air Plus. It not only lubricates the machine but also cools the compressed air. To do this double-duty job, the unit has a combination radiator type oil cooler and engine radiator. Cool oil is sprayed directly on the rotor and bearing in each stage, lubricating the sliding vanes, rotor slots, cylinder walls and bearings.

Cools as It Oils

The lubricating oil, mixed with the air, acts as a coolant absorbing most of the heat of compression. The oil then passes out through the final discharge with the air into an air receiver. Most of the oil drops to the bottom of the air receiver and runs down through a connection into the oil storage tank. Any oil vapor in the air leaving the air receiver is removed by a large filter. Another problem common in rotary-vane type compressors which has been overcome by Jaeger is air leakage or slipping around the ends of the rotary blades and rotary. This also was eliminated by the design of the lubrication sys-

The new Jaeger 600 is of simple but rugged design. The two-stage unit consists of two horizontal compressor units mounted end-to-end with the rear flange of the low-pressure unit bolted to the front flange of the high-pressure unit. The drive between the two units is a gear-type coupling.

Each rotor is mounted on antifriction bearings and has longitudinal slots with non-metallic sliding vanes which are held out against (Continued on page 134)













BIG PRODUCTION

Big 18 yard Terra Cobras are the first 2-wheel tractor scrapers with the complete necessary range of ten practical gear steps - balanced power that handles every range of work from the toughest borrow pit to the fastest haul road. Every power range is at your operator's command - all the time - with no changeover required. 10-speed Cobras work right in with any equipment on your spread, handle slow hard going one minute, move over instantly to fast easy going and hauls to 35 mph. For peak efficiency on every part of every earthmoving job - for the versatility and faster work cycles required to make your jobs pay off today, pick the 10-speed Cobra that's designed and built to

THESE FEATURES COMBINED:

- 10-Speed Transmission
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- High HP to Capacity Ratio
- Extra Ruggedness Throughout

Sunnyvale, California, U.S.A.





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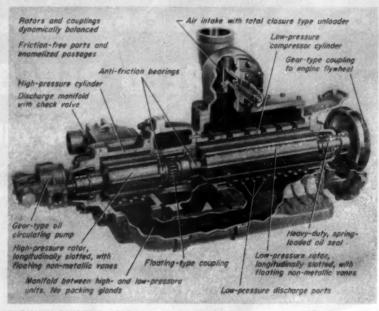












CUTAWAY DRAWING of the new Jaeger 600-ft air compressor reveals the principal features of the portable two-stage, sliding vane type rotary compressor.

the cylinder bore by centrifugal force, as the rotor revolves in the cylinder. Free air enters the low-pressure cylinder, which is slightly longer than the high-pressure cylinder, through the oil bath air filter, on through the unloader and through intake ports 180 deg apart in the cylinder wall.

Because of the off-center mounting of the rotor, the spaces between the extending vanes alternately increase and decrease in size during each revolution of the rotor. Air that is drawn into each succeeding cell or pocket between the vanes as it reaches its maximum volume is compressed as the cell or pocket grows progressively smaller and discharged through the ports into a manifold. This manifold carries the air to the high-pressure cylinder where the process is repeated, but at a much higher pressure. From the second stage the air is discharged into the air receiver.

Controls on the Jaeger rotary compressor perform two major functions. First, a device, air-animated and automatic, stops the compression cycle at a predetermined pressure. A pilot valve controls the air flow to this diaphragm and only functions when there is no demand for air. The check valve then is closed and chokes off the supply and air flow to the intake of the low-pressure cylinder at the same time the engine speed is reduced to idle.

The second phase of the control

is to regulate or modulate the air output in relation to the amount of air being consumed.

Jaeger has had pilot models of the "600" in the field for more than a year, and users seem well satisfied. You'll be able to recognize this new unit by the bright red paint job and by its modified streamlined appearance.

Compaction Handbook

If you're looking for the answers to soil-compaction problems, a 28-p pocket-size handbook just published by Gunderson-Taylor Machinery Co., Denver, Colo. might supply your answer. This booklet, entitled Compaction Handbook, is dedicated to men in the construction industry and is the result of inquiries received from construction firms and individuals requesting information in connection with soil compaction.

It covers the principle and evolution of soil-compaction, the development of compaction equipment, the various types of soils, their identifications, classifications and engineering characteristics. One chapter covers soil compaction tests, including formulas and expected results. Another covers backfill compaction, the need and use of laboratory reports, compaction energy and moisture and proper control. The booklet is free to members of the earthmoving industry.



UNDERGROUND PRODUCER

Underground in mines, construction jobs — the Eimco 105 with the Eimco excavating attachment is the big producer.

Loading trucks with abrasive heavy ore at the rate of 8 to 10 tons per minute, Eimcos in this mine, have steadily reduced the cost of loading ore every month since their installation.

Eimcos are built to withstand the most severe treatment working on uneven bottoms, digging in blocky, broken rock and moving in narrow passages or big rooms with definite limitations in headroom. Unusual Eimco features make them a standout for performance. Some of these features include frame mounting of the excavating attachment to provide for free oscillation of the tracks at all times, variations in Rocker-Arms and buckets to meet all requirements for headroom and material to be loaded. Independent track control with finger tip operating levers and many other exclusive features.

Write for complete information.

THE EIMCO CORPORATION

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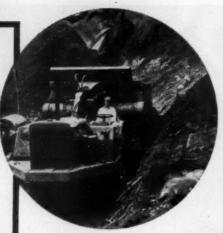


DAILY DOUBLE PRODUCTION

The Bureau of Public Roads is cutting a highway through the rugged Smith River country in Oregon. Cosmo Gilo Construction Co., Eugene, Oregon, is contractor on the 900,000 cubic yard project.

Two Athey PR21 Trailers with DW21 Tractors are in the equipment line-up that is moving rock, loam and boulder-mixed gravel material. The rigs are loaded in 4 minutes with 23 loose yards, haul 5000 feet in 4th and 5th gears, dump and return in 16 minutes — turning a daily production of twice that of similar units on the job.

This daily double production is what you can get with easier loading, faster hauling, quicker dumping Athey PR21s on your job. Give your nearby Athey-Caterpillar Dealer a call and he'll give you all the facts, figures and demonstrations necessary to prove our point. Call today!



LOADING . . . operators and owner agree — the PR21s are easier to load. The large, open bowl provides an easy target, maintains shovel efficiency.



HAULING ... with higher engine torque and largestires, the DW21 can pull through soft spots that require other rigs to change gears.



DUMPING... ability to spread load or dump over edge of fill cleanly means added profit for you.



ATHEY PRODUCTS CORPORATION
5631 West 65th Street . Chicago 38, Illinois

More Performance, Longer Wear With Elevator Conveyor Belts

By A. F. MATHEIS Assistant Vice-President Thermoid Company

ELEVATOR CONVEYOR BELTS with metal buckets, properly selected, installed and maintained are key units in bulk materials handling. An easily integrated connecting link, this type of conveyor offers increased flexibility in helping to solve material-handling problems. The unit fits in with and maintains or improves the efficiency of continuous systems. It occupies little floor space and adapts easily to out-of-the-way places.

To take full advantage of the benefits these units can offer, a few tips for selection, installation and maintenance will be helpful.

Selection

Better performance of the elevator conveyor belt hinges on proper allowance for such factors as: material to be conveyed, height, bucket spacing and belt speed.

The type of material to be conveyed determines whether the elevator type is boot loading or con-

Centrifugal discharge or spaced bucker elevator

tinuous bucket, shape of bucket, size and spacing of bucket and material used to manufacture metal bucket.

A material light, soft and finely ground can be handled by large buckets, closely spaced and made of light-gage, inexpensive metal.

The centrifugal discharge or boot loading elevator (see Fig. 1) is best suited to free flowing materials, al-

though lumpy materials up to 3 in. can be handled. The unit is usually vertical, and the buckets are filled by "digging from the boot."

Heavy, hard, lumpy materials are handled best with continuous bucket elevators (see Fig. 2, page 138) which are fed directly from a loading chute. To facilitate loading and discharge, these elevators usually are inclined, the belt being supported on the up-run by flat carrier pulleys. In discharge, the bottom and sides of the bucket ahead form an auxiliary discharge chute for material from the bucket above. Buckets for this type of material

practical pointers...

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the Berger Engineers' Transit. Horizontal circle has double opposite verniers reading to minutes, 30 seconds or 20 seconds; verniers are offset to line of sight and provided with reflectors. Protected vertical circle has double vernier. Graduations on Sterling Silver. Erecting-internal focusing telescope. Smoothacting leveling and tangent screws; level vials readily visible. Large bearing areas on centers and clamps. "R" type equipped with compass, yoke standard and wye bearings.

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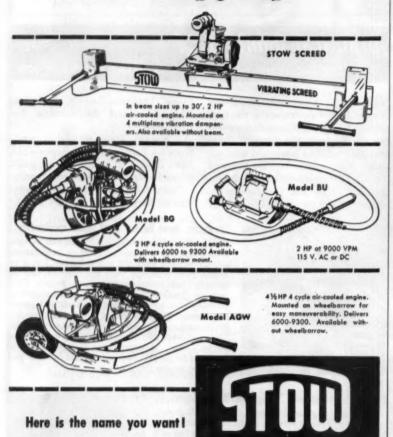




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Concrete facts about Concrete Vibrators and Screeds



The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so attachments may be used directly on the vibrator shafts.

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.

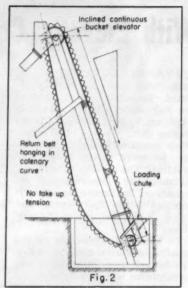


STOW MANUFACTURING COMPANY

31 Shear Street, Binghamton, New York

CONVEYOR BELTS . . .

Continue



should be large and wear-resistant. Height of the material to be raised generally should not exceed 80 ft because of sway danger.

Bucket projection on the belt should be watched and kept as small as possible, consistent with good capacity. The extent of bucket projection also affects belt thickness. The greater the leverage on the bucket bolt heads, the more plies are required to keep the bolt from pulling through.

In bucket spacing, the closer the buckets are to each other, the greater the capacity of the belt for equal speeds. But when this is done, remember the load on the belt is increased, and the increased number of bolt holes weakens the belt.

The largest factor to be considered in determining belt speed is usually the feed rate of other equipment such as the belt conveyor which delivers material to the pit.

Installation

During installation, close attention should be given to proper splicing, alignment, loading, tension, safety devices and pulley lagging.

Sequence of installation steps is as follows: Belting should be mounted on a strong wooden or metal stand and metal bar at point of installation. To punch holes, draw a belt on to a temporary table, bucket side up. Mark bucket spacings with steel square. Now make a templet of bolt holes or

(Continued on page 141)



Field Replacement of FUEL, AIR, WATER AND OIL LINES Quick and Easy WITH NEW AEROQUIP SOCKETLESS

FITTINGS AND HOSE KITS



Hose lines are the life lines of construction equipment. The breaking of a single fuel, air, water, or oil line while equipment is on the job results in expensive downtime until the damaged hose line can be replaced.



 This compact, new Aeroquip kit can be carried right on your field service truck. It contains a complete assortment of SOCKETLESS fittings and reels of Aeroquip 1525 hose that can be cut to required length.



Hose line assembly is amazingly easy . . . and QUICKI No tools of any kind are needed because 1525 hose can be pushed on the SOCKETLESS fittings by hand. In spite of the ease of assembly the fittings STAY on.



 By making fuel, air, water, and oil lines right in the field you save time and money. Solve your hose line replacement problems with this Aeroquip SOCKETLESS kit. See your distributor or write us for information.



AEROQUIP CORPORATION, JACKSON, MICHIGAN

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TODAY'S FAST-MOVING CONSTRUCTION JOBS call for nimble haulers like this new GMC M470 — shown here equipped with a 5-yard Heil dump body. Its 145 horsepower comes from GMC's famed "302" engine — pound for pound

the mightiest in gasoline truck history. And its extra hustle's due to the timesaving abilities of the world's first 8-speed Hydra-Matic Drive. Little wonder it's a top choice on any job calling for dependable 22,000 GVW hauling.

You make shorter work of any job with Hydra-Matic* GMC's

THERE'S no mystery about it. These great new GMC's simply step up your pace on those time-killing routines that slow down any job using ordinary trucks.

Take the incessant stop-and-go - the slow-motion maneuvering on the job-site.

Hydra-Matic's full-torque self-shifting eliminates the lag at every gear-change—avoids all those momentum losses. Every start—every pickup in speed —is quicker. That alone's a healthy timesaver.

Hill-climbing goes at a smarter clip. For these GMC's deliver full pulling power automatically—and top the toughest grade without a break in stride.

And you save more than time. There's no conventional clutch to go bad-or

even need minor adjustment. Axle and drive line can't be damaged by shock-loading. Brakes and tires last longer. In fact, all maintenance needs—and maintenance costs—are less.

Keeps Drivers on the Beam

A Hydra-Matic GMC makes things as easy for the driver as for itself. He avoids all that clutch-pedal hopping—those hundreds of daily fights through a gearbox. Less tired—more alert—he's bound to do a better job.

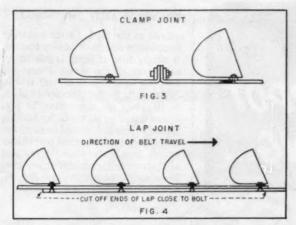
Take a minute to add in other Hydra-Matic advantages like better gas mileage—longer truck life. Then see your GMC dealer and find out how soon you can have these timesaving—and moneysaving—trucks working for you!

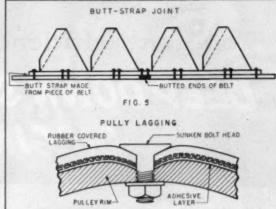


Be careful-drive safely

"Hydra-Matic standard on many models; optional at extra cost on some others

GMC Truck & Coach-A General Motors Division





place punched bucket over spacing lines and mark position of bolt holes. Punch and cement holes to protect the exposed belt carcass. Push bolts through belt, and on each bolt place a leather washer. Place buckets over bolts and tighten nuts with round side next to buckets. The use of lock washers is recommended. Use 34-in. bolts on 4-ply belts, 1-in. bolts for 5- and 6ply and 11/4-in. for 4- and 8-ply.

Splicing

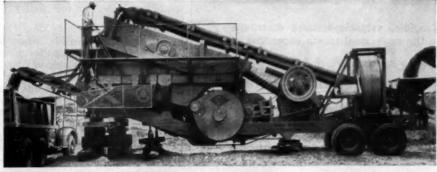
For belts of 5-ply thickness, or under, the bolted clamp joint may

be used (Fig. 3). Belt ends must be bent outward at right angles to form a ridge which is then bolted between a bar clamp.

A lap joint splice (Fig. 4) is commonly used on continuous bucket elevators. Belts must be lapped so pulleys "fall off" shoulder during running. The end of the lap in contact with the pulleys should be the last part of the joint to pass over the pulley. The lap extends a distance of from 3 to 5 buckets and is secured by the same bolts that hold the buckets. This splice is not suitable for belts of more than 7 plies

thick because it is too stiff to pass tightly over the pulleys, and shear action in the lap may work the bolts loose.

The butt-strap joint (Fig. 5) may be used on belts of 8 or more plies. After ends are square and butted tightly against each other, a piece of belting is bolted over the ends, covering equal distances on each side of the break. For spaced buckets, this piece should be twice the belt width. With continuous buckets the splice extends under two buckets on each side of the butt. A double row of bolts is re-



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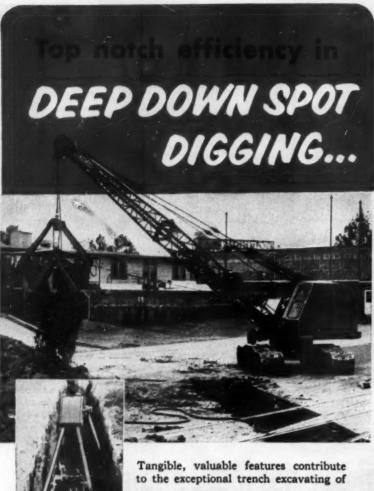
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discharge—removable counterweights to help force the shell into material and the block and tackle principle of multiplying closing power.

Others are low headroom that makes handling easy—low center of gravity that aids in placing the bucket when below the line of vision and side cutters which cut clearance for the bucket and aid in maintaining parallel trench walls.



CONVEYOR BELTS . . . Continued

quired at the butted ends and may necessitate omission of one bucket. A single row of bolts is placed on each end of the strap. Place one bolt for every inch of belt width, ½-in. bolts for belts under 10 plies, %-in. bolts for more than 10 ply.

The plate joint, made by bolting plates across the butted ends of the belts, may be used on all belt thicknesses. It is better than the lap and butt strap splice on stiff thick belts because there is practically no shear action.

Alignment

A crooked-running belt strains pulleys and shafting, wastes power, wears bearings and subjects the belt to damage, so make sure the belt runs true.

Loading

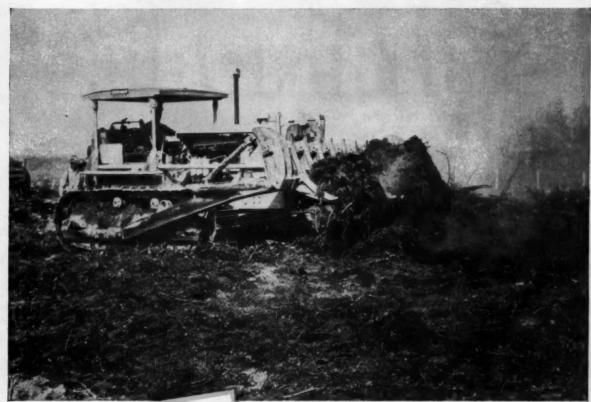
Consistent loading, through uniform delivery to the boot, is another valuable aid to steady unvaried operation. The belt must be protected against the effect of material spilled on up-run or at the head pulley. When small size material is being conveyed, flat-type paddle wheel pulleys are recommended for use as foot pulleys, since they allow spilled material to pass off. Larger lumps require a protector above the foot pulley.

Safety Devices

As for safety devices, when a choke occurs, the head pulley must stop as soon as the belt slows down; otherwise the belt can be damaged. Besides a control to assure this, two other safety devices should also be installed, — one to stop feeding when the bins are full, and one to stop the conveyor from delivering to the boot as soon as the elevator motor is stopped. A back-stop device to keep the elevator from running backwards under the weight of the load after the power has been shut off may also be installed.

Pulley lagging is another useful device on elevator head pulleys, since it prevents wear on bucket bolts, particularly when the pulley side of the belt cover is not thick enough to allow the bolt heads to sink in. Lagging also may be used to increase the coefficient of friction between the belt and the pulley to obtain required tension and to prevent slippage under the load.

All equipment should be insected regularly, and any belt damage, no matter how slight, should be repaired immediately. For complete details on how to repair belts, see CM&E, July, 1953, p 129.



A Fleco Rock Rake, on a Caterpillar D8 Tractor, gives complete, economical clearing of undesirable growth, making wasteland usable. The Rock Rake's strong cast-alloy steel teeth make it possible to stack the growth in dirt-free piles for quicker, easier burning.

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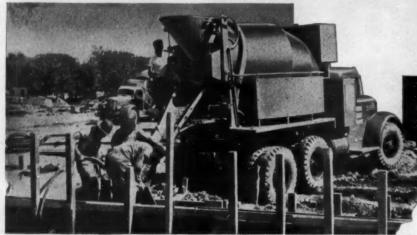
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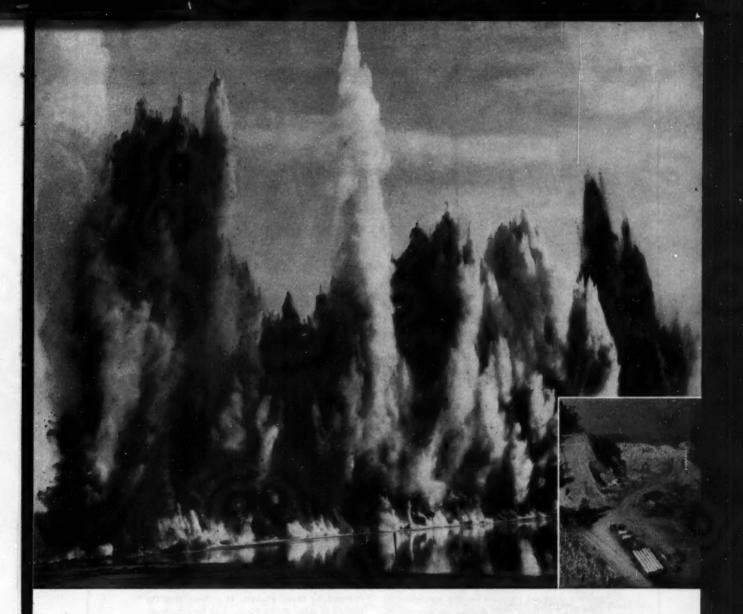
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WHEN PIPELINES **CROSS WATER** explosives research pays off

The tremendous power of dynamite, skillfully and ingeniously handled, made it economically possible to cross the wide, deep Tennessee River (inset above) with two parallel pipelines, 50 feet apart. Trenches blasted underwater through hard red clay in the shallows, and lime rock in the 40-foot-deep channel, opened the way for speedy dredging operations . . . another example of the efficiency of modern explosives and blasting methods.

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The Reader His Mark

HE ABC SYMBOL, which appears at the head of this page, is your brand—the reader's brand—on this magazine. It stands for Audit Bureau of Circulations. It means that this magazine will stay in business only so long as it continues to serve its readers to their satisfaction.

That Bureau—known for short as ABC—is a voluntary, nonprofit, cooperative association founded in 1914 by a group of publishers, advertisers and advertising agencies who wanted to establish and maintain higher standards of publishing practices than then prevailed. Its primary and specific purpose was to set up yard-sticks to appraise circulation values and to verify the claims of publishers as to their circulations. For the buyer of advertising space this provides an effective means to take some of the guesswork out of buying and to reconcile the conflicting claims of competing publishers. BUSINESS WEEK magazine has aptly described ABC as "the publisher's conscience—and cop."

BUT IN DOING that job, ABC performs another function of high importance to the readers of ABC member publications. It provides a constant pressure on the publishers to keep alive in their staffs a sense of primary responsibility to their readers. That is because the most simple and direct method of making a publication responsible to its readers is to place upon it a purchase price, whether by subscription or newsstand purchase. The right to purchase or to refrain from purchasing a publication gives to the reader and to no one else the power to pass effective judgment on the publisher's success in serving the reading public. Each paid publication will grow or languish, will prosper or fail, in proportion as it wins or loses the following of thousands or millions of readers. The readers, by their patronage, record their judgments as to whether the publisher and his publication are measuring up to their responsibility to them.

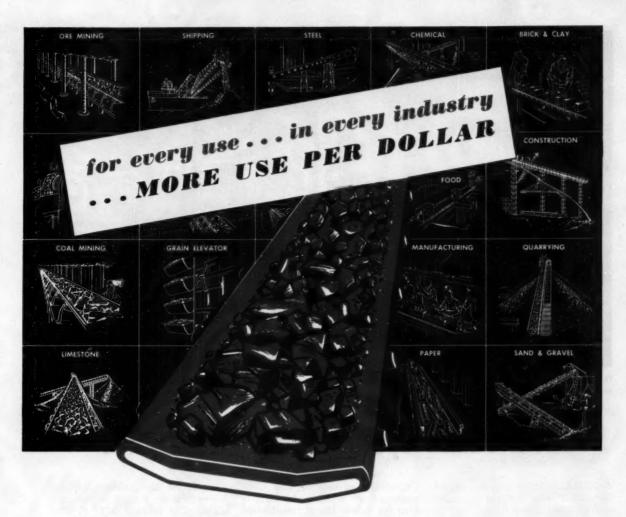
And that is where the ABC comes into the reader's picture. The newspaper or magazine that carries the ABC symbol on its masthead must in the first place be a paid circulation publication. Moreover, it must conform to the high standards set up by the Bureau as to terms of payment and accounting methods. And again it must open all of its books to the auditors of the Bureau on demand.

Since the information thus determined by thorough and impartial audit is periodically made public through the ABC statements and audit reports, it is constantly available to and universally used by advertisers who are considering the purchase of space in an ABC publication. These reports show the circulation trend, as verified and certified by ABC, and thus put the advertisers in a position to know whether or not the publisher is rendering satisfactory service to his readers.

Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner that he recognizes his primary obligation is to his readers and that he owes his standing to a voluntary demand by those readers. It follows that the editors of ABC publications must be exceptionally alert to the desires of their readers and responsive to their needs, since any decline in circulation will soon show up in the ABC statements and audit reports.

THAT IS WHY WE describe the ABC symbol as the reader's brand. It shows that a publication must be primarily responsive to him and that he holds in his own hands its success or failure. And that ABC symbol is not only a constant reminder to him of that fact, but also an equally constant reminder to all concerned that the reader's willingness to pay for the ABC publication is the acid test of its value to him and to the advertiser.

McGraw-Hill Publishing Company, Inc.



R/M CONVEYOR BELTS

If conveyor belts are your problem, turn to Raybestos-Manhattan. There are R/M Conveyor Belts with extra cushion for heavy shock loading. R/M Conveyor Belts for mining, quarrying, or bulk materials are unequalled for natural troughing, flexibility and long life. The latest exclusive development of R/M engineers is the "XDC" cover which protects heavy duty conveyor belts against wear, abrasion, cuts and tears to a

degree never before attained. Hot material, high tension, long lift, oil or non-spark conditions . . . all are met with special R/M Conveyor Belt designs. Equally good engineering goes into R/M Belts for light duty . . . packages, parts, cases or wood chips. For every use R/M Conveyor Belts give you More Use per Dollar. Consult an R/M representative. Ask him also about R/M Hose, Transmission, V-Belts and other industrial rubber products.



MANHATTAN RUBBER DIVISION-PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN,









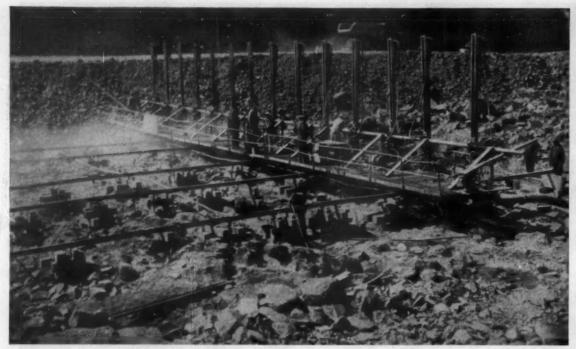






Other R/M products include: Industrial Rubber * Fan Belts * Radiator Hose * Brake Linings * Brake Blacks * Clutch Facings

Asbestos Textiles * Packings * Engineered Plastic, and Sintered Metal Products * Bowling Balls



TRAVELING DRILL JUMBO mounts 14 Gerdner-Denver rock drills and pulls itself along on blocked-up aluminum rails. One line of

holes covers the full width of the 8,000-ft-long tailrace channel that is being blasted out for Roanoke Rapids Dam in North Carolina.

Drill Jumbo Speeds Tailrace Excavation

A DRILL JUMBO that mounts 14 Gardner-Denver drills in a row and slides on aluminum rails is speeding the excavation of the 8,000-ftlong tailrace channel at Roanoke Rapids Dam, N. C.

Central Engineering and Contracting Corp. developed the rig to drill the full width of the channel at one time. Holes 24 to 30 ft deep are drilled into the drained river bed for blasting out the top lift.

Because of the uneven surface, lower lifts are drilled with wagon drills. The tailrace is 80 ft wide and averages 45 ft deep.

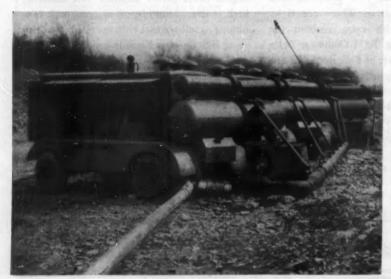
Holes are drilled about 7 ft apart. Spacings can easily be adjusted, however, by sliding the drills on the horizontal pipe support. Each drill has a cantilevered steel-grating platform from which the driller works his controls. After a line of holes is drilled, three air tuggers pull the rig ahead on seven lines of blocked-up aluminum rails. The lightweight rails are easily moved ahead by hand.

Aluminum Pipe

Aluminum also plays an important role in carrying compressed air to the drills. Batteries of Chicago-Pneumatic 600-cfm compressors feed air at 105 psi through lines of Alcoa 6-in, aluminum pipe. The 20-ft lengths weigh only 27 lb and are quickly handled and connected by one man.

Wade Quick-Lok aluminum-alloy couplings provide enough flexibility at the joints to run the high pressure line over rugged ground. Pipe lengths are connected by in-

(Continued on page 150)



COMPRESSED AIR for the drill jumbo is supplied by a battery of six Chicago-Pneumatic 600-cfm compressors and fed through a line of Alcoa 6-in. aluminum pipe.

Page 148 — Construction METHODS and Equipment — October 1854



World's

most powerful pick-ups, panels and stakes!



UP TO 39.4% MORE POWER than other ½-, ¾-, and 1-ton trucks. It's low-cost power, too! Dodge V-8 pick-ups offer most horsepower for your truck dollar.



Test for yourself the flashing acceleration, the big power reserve of this new 145-hp. Power-Dome V-8... the ultramodern truck engine that gives Dodge pick-ups and stakes more power than any low-tonnage truck! Ask your dependable Dodge truck dealer to show you a new Power-Dome V-8 or a 110-hp. thrifty six!



OFFERS MORE MILES PER GALLON on regular gas—most hp. per cu. in. displacement of any popular truck engine prove new Power-Dome V-8's economy.



"NEW-TRUCK"
POWER LASTS
LONGER: PowerDome design . . .
proved in higher tonnage models . . .
means fewer powerstealing "hot spots" in
combustion chambers.

More proof that

Dodge trucks offer a

better deal for the
man at the wheel!

DODGE識TRUCKS



WAGON DRILLS are used instead of the jumbo on the lower lifts connected by Quick-Lok couplings carries air to the drills. Blasted because of the rough ground surface. Lightweight aluminum pipe

rock is excavated with a Marion 7-yd electric shovel.

serting the ends into a coupling and locking a pin in at the top.

All of the 1,000,000 yd of rock in the tailrace is being excavated with a Marion 7-yd electric shovel and hauled by a fleet of Euclid enddump trucks. The material is used mostly to build up dikes on each side of the tailrace.

The \$34,000,000 Roanoke Rapids

Dam is a project of the Virginia Electric and Power Co. Stone and Webster Corp. is in charge of design and construction, with Charles T. Main, Inc. as associate engineers.



This NEW Felker DI-MET CONCRETE CUTTER meets all cutting requirements at LOW COST! Takes deep cuts and covers the footage of big machines, yet handles as easy as a baby buggy. Light weight means more maneuverability on close-ups, easier loading for fast transportation. Holds straight and true on long stretches. Uses economical 10" or 12" blade sizes. Cuts up to 3%" deep with 12" blade. 13.5 h.p. Wisconsin engine provides ample power even for 14" blades and deeper cuts (by equipping with special blade guard). Hydraulic lift raises blade from cut, velvet-smooth hydraulic retardant eases blade into concrete-saves wear, increases blade life.

ADD ACCESSORIES AS YOU NEED THEM!

This new DI-MET Model 200 is available as a BASIC UNIT or may be purchased with additional accessories. POWER DRIVE and COOLANT PUMP ASSEMBLIES can be field installed. STARTER, GENERATOR and BATTERY must be ordered with the ENGINE. Choose what you need, buy what you want!

Many other exclusive features -ask for circular!

FELKER MANUFACTURING CO.

TORRANCE . CALIFORNIA

World's Largest Manufacturer of Diamond Abrasive Cut-off Wheels and Machines

Made by the only manufacturer building both CONCRETE

CUTTING MACHINES AND DIAMOND WHEELS... the winning

combination that means more footage at less cost!



You don't have to be an old-timer to remember when the first General Motors Series 71 Diesel was introduced. We called it the "71" in 1938 and we call it the "71" today.

But in 17 years these design improvements from top to bottom have given operators higher horsepower, lower fuel consumption and longer engine life. And now, a whole series of new improvements has made this fast-stepping, compact, 2-cycle Diesel better than ever.

NEW 17 TO 1 COMPRESSION gives better fuel economy, squeezing more power from every gallon of fuel.

"FIGURE 8" CYLINDER LINERS give you a cleaner burning, more efficient engine. Air intake area is increased 32% for more complete fuel burning and better exhaust.

TAINER AND CAM FOLLOWER DESIGN mean longer life, less maintenance cost. High-valve unit injectors last longer because the valve assembly is away

from high cylinder temperature areas. Hard-chrome steel "Lite-Tite" piston rings resist wear; are tougher and more flexible and give many more hours of service.

And—best of all—in your next overhaul you can incorporate any or all of these new improvements in any GM Series 71 Diesel engine you're operating today. "The Inside Story" tells you how these new improvements can help cut your costs and speed your jobs. Mail the coupon today for your copy.

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.

It Pays to STANDARDIZE on



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	City & States	



with SMOOTH, POWERFUL TRACTION —with almost no upkeep!

YOU DON'T NEED CRAWLERS FOR TRACTION! Here is a Blaw-Knox Bituminous Paver handling 16-ton trucks on a 12% grade. The B-K took the big loads up the grades with ease—without an extra peep from the engine—without a chatter in machine or screed.

The Blaw-Knox is on wheels!

Wheels are simple. They require practically no upkeep. They eliminate the 500 to 700 parts that make up most crawlers. They assure more accurate steering and eliminate the oversteering and correction characteristic of crawler travel. They reduce return travel time to start new parallel courses and cut down on truck "standing time." Pneumatic tires absorb excess vibration that lowers the quality of screed performance and the resulting surface. Operator fatigue is reduced and machine life prolonged.

Wheel travel makes possible a better black top job at higher speed

Get the whole story about the Blaw-Knox Bituminous Paver before and lower cost! you buy. Ask for the two folders - "The Greentree Story" and "The Garden State Parkway Story."

BLAW-KNOX COMPANY

FOOTE CONSTRUCTION EQUIPMENT DIVISION 1910 STATE STREET NUNDA, NEW YORK

On wheels it will pave for less

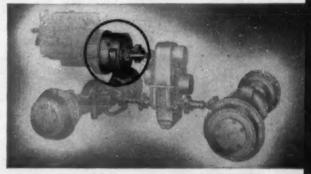
Bituminous



Why the **MICHIGAN*** Tractor Shovel moves bigger yardage - the Clark Torque Converter*

You can do miraculous things with a MICHIGAN* Tractor Shovel because of extra power when it's needed—a result of 3-to-1 torque multiplication in the CLARK Torque Converter.

- Digging into TOUGH Material—watch a MICHIGAN force its bucket into tough, compacted material: not a "shock" action—but a steady, resistless flow of increasing power that puts no punishing strain on the driving shafts and gears. Torque multiplication plus the terrific digging power of the hydraulic bucket rams enable the MICHIGAN to perform unbelievable feats.
- Maintenance and Down-time reduced to a minimum—the CLARK Torque Converter eliminates the engine clutch: the weakest link in a conventional power-train and the unit most frequently requiring repair.
- Make ANY Shift at ANY Time with the Torque Converter, driving is as easy as handling your car! Shift into Forward or Reverse, into High or Low range while moving in either direction... the Torque Converter absorbs shocks.
- Standard Equipment on All Models—Clark is first to present a full line of Tractor Shovels with Torque Converter as standard equipment. See the MICHIGAN Tractor Shovel. Watch it in action, demonstrating its astonishing power, speed and maneuverability



Talk to your MICHIGAN dealer; and send for the MICHIGAN Fact Folio, handy file of specifications and action photos—the coupon gets prompt action.

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CLARK EQUIPMENT COMPANY 19C Construction Machinery Division 380 Second Street Benton Harbor, Michigan

i	Please	send	the	MICHIGAN	Tractor	Shovel	FACT	FOLIO

Firm

Firm

City_____State_____

17-ton glass-lined Tank going up to top story of stockhouse 198 feet high



highest hoist at MILLER HIGH LIFE...with WAUKESHA



Built in 3 phases, Stockhouse I at Miller Brewery, Milwaukee, stores ½-million bbls. Miller High Life in 240 tanks. Each 1070-bbl. glass-lined tank is 45' long, 11'6" diam., weighs 34000 lbs. In the third construction phase, 80 tanks were hoisted to 4 top stories of this 12-story, 198-ft. high stockhouse. Five weeks, 2100 ft. of cable, and Waukesha power did the job.

Price Erecting Co., Milwaukee, used a Thomas Winch with a six cylinder, 4%-in. x 5½-in., 517 cu. in. Waukesha Power Unit with a Twin Disc forque converter,

> WAUKESHA ENGINES and POWER UNITS 10 hp. to 600 hp.

Send for Bulletin 1079

MAUKESHA MOTOR COMPANY

Waukesha, Wisconsin New York-Telsa-Los Angeles



* SERVICE *

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Bueyrus-Erie Co.: Has appointed West Coast Engine & Equipment Co., 1077 Eastshore Highway, Berkeley 10, Calif. as distributor in northern California serving territory north of and including Monterey and Fresno Counties but excluding on the east Mono, Alpine and Plumas Counties, eastern portions of Eldorado, Placer, Nevada and Sierra Counties and all but the northwest corner of Lassen County. The firm now offers sales and service on Bueyrus-Erie general purpose shovels, cranes and draglines, equipped with gasoline, diesel or single-motor electric power units.

Clark Equipment Co.: Six new dealers have been appointed to sell and service the Michigan line of excavator cranes and tractor shovels, products of the Construction Machinery Division. They are: Ed Meyer Tractor Co., Mount Vernon, Ill., for southern Illinois; Linder, Cox & Co., Lakeland, Fla., for central Florida; Dempster Brothers, Inc., Knoxville, Tenn., for eastern Tennessee and northwest Georgia; Standard Equipment and Supply Co., North Little Rock, Ark., for most of Arkansas; Power Equipment Co., Lubbock, Tex., for northwest Texas and Wilson Equipment Co., Odessa, for west central Texas. Clarence E. Killebrew, vice-president of Clark Equipment Co., also announced that the Bode-Finn Co., Cincinnati, Ohio, has had its territory enlarged to include 20 counties in central Ohio.

Galion Allsteel Body Co.: Announces appointment of Power Brake and Equipment Co., 230 South Water St., Tampa, Fla. as distributors of Galion Allsteel dump bodies and hydraulic hoists in central and western Florida. Complete service facilities will also be offered.

Highway Equipment Co., Inc.: The Long-Talbot Equipment Co of Columbia, S. C. has been appointed dealer for the complete line of HI-WAY spreaders covering the state of South Carolina.

W. A. Riddell Corp.: Newly appointed distributor for WARCO Motor Graders in central New York State from the Canadian to the Pennsylvania borders is Credle Equipment, Inc. of Utica, N. Y. with a branch at Potsdam.

"Cut repair bills to keep costs down"



Paul Liner takes pride in the quick, friendly service of his Yellow Cab Company of Big Spring, Texas.

—so says Paul Liner, head of Yellow Cab Company of Big Spring, Texas. And Mr. Liner should know; he has been in the cab business for over 20 years. Today, he operates 25 Ford radio cabs in Big Spring. His cabs operate under the usual tough driving conditions: constant starting and stopping, idling engines, city as well as country roads, extremes of weather.

It takes a close maintenance program and dependable lubricants to keep cabs running. And for the past six years, this cab operation has used Phillips 66 Heavy Duty Motor Oils. From his experience, Mr. Liner comments: "I can honestly say that the service I've received is excellent."

And George Russell, Superintendent of Maintenance, backs Paul Liner's words with facts and figures: "We get top performance for at least 125,000 miles with no repairs—nothing except tune-ups. We haven't had any valve and bearing trouble since we changed to Phillips 66 Oils."

Yellow Cab Company of Big Spring is only one of many fleets getting good results with Phillips 66 Heavy Duty Motor Oils. And there is no reason why your fleet can't get the same results.



PHILLIPS 66 HEAVY DUTY MOTOR OIL



"Well pleased with the trouble-free, dependable operation of the Clyds hoist," says J. L. Cartwright, hoist operator for J. W. Bateson Company, Inc. of Dallas. 42 Story Republic Bank Building, Dallas, 6 floors underground, is of steel frame construction with all aluminum covering, no masonry. A 8,000 lb, line pull Clyde hoist handled all kinds of building material on this job. Hoist has been in continuous service for over four years, including other jobs such as the Corrigan Tower and Cibralter Life Insurance Building also in Dallas.

Consider the many outstanding advantages of Clyde Band Friction Hoists and you'll readily understand why they're the favorite of contractors and operators.

Cool running, long wearing frictions give smooth and positive engagement eliminating

cool running, long wearing frictions give smooth and positive engagement eliminating shock loads on hoist or cable. Large diameter, efficient brakes assure safe and accurate load control at all times. Anti-friction bearings throughout permit higher operating speeds, reduce maintenance costs and result in greater line pulls with less power consumption. Husky pawls, that nestle into deep pocket ratchets lock in or out of engagement for additional safety. Fatigue-free operation with either manual or air operated brakes and clutches.

For complete information on other Clyde Hoist advantages-Write Today.



INTEGRATED COMPARIES

BARIUM

THE L COMPONATION

PRINTED AND AND ADDRESS OF THE LANGUAGE

MARKETON, PRINTED AND ADDRESS

BUY

these cost-reducing forms for concrete:

1. EFCO "Lifetime" Steel Forms

<u>BUY</u> these forms for your: (a) Minimum form requirements. (b) Larger form requirements where reuse of the form equipment and simplicity of the form work seem to make purchase more practical.

2. SPECIAL ECONOMY Forms

These are designed and manufactured to your specifications and are supplied with or without supervisory service for your special form requirements.

RENT

3. ECONOMY Steel Forms

<u>RENT</u> these forms for your: (a) Larger unusual form requirements. (b) More difficult form requirements. These forms are supplied with supervisory service.

For details and estimates, call or write:

ECONOMY FORMS

HOME OFFICE: DES MOINES, IOWA

DISTRICT SALES OFFICES: St. Louis, Mn. - Kansas City, Ma. Lincoln, Nebr. - Minneapolis, Minn. - Ft. Wayne, Ind. - Cincinnall, Ohio - Cleveland, Ohio - Metuchen, M. J. - Spring-field, Mass. - Washington, D.C. - Decatur, Ga. - Dalsas, Texas - Los Angeles, Calif. - Oakland, Calif. - Denver, Colo.



Concrete

VIBRATORS

Gasoline Engine or Electric Motor Driven

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FRONT END SHOVELS
for Industrial Tractors

HEATING KETTLES

AGGREGATE DRYERS

ASPHALT PLANTS
Partable — Stationary

Write for Circulars

White Mig. Co.

ELKHART 6

INDIANA

SALES AND SERVICE . . .

Continued from page 154

Schield Bantam Co.: Announced appointment of The Capitol Road Machinery Co., 945 W. 3 Ave., Columbus, Ohio, as exclusive distributor for Schield Bantam's complete line of truck- and crawler-mounted %-yd power cranes and excavators, including the BANTAM line of allnew and re-manufactured trucks and crane carriers in central and southeastern Ohio.

On the Sales Front

Air Placement Equipment Co.: Ralph Cronemeyer, partner, recently announced the appointment of William F. Rutherford, 111 E. Jerald St., Highland Springs, Va., as the company's eastern field engineer. He will direct sales and service for the company's BONDACTOR concrete gunning equipment and MIX-EL-VATOR, a portable, combination mixer, proportioner and elevator.

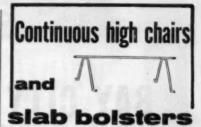
American Steel Dredge Co. Inc.: Appointment of Fred J. Schmidt as chief sales engineer has been announced by Don L. Douglass, vice-president and manager of product sales.

Carver Pump Co.: At the recent annual sales meeting James E. Kuppe was appointed general sales manager. He succeeds Robert E. Tanner who is also vice-president and general manager of the company.

Clark Equipment Co.: Robert H. Davies, vice-president, announced appointment of L. A. De Polis as general sales manager of the Industrial Truck Division, manufacturers of fork-lift trucks, straddle carriers and other materials-handling equipment. He will make his headquarters in Battle Creek, Mich., and supervise sales efforts of more than 60 Clark dealers in the United States and Canada.

Galion Iron Works & Mfg. Co.: Charles O. Evans has been transferred from the Pacific northwest territory and is now the Galion district representative in Florida, Georgia, North and South Carolina. His headquarters will be in Columbia, S. C. Announcement was made of the appointment of Robert N. Shears as district representative in the Pacific Northwest. His territory includes Washington, Oregon, Idaho, Montana, Utah and Wyoming. His headquarters will be in Portland, Ore. He replaces Charles O. Evans who has been transferred.

The Silent Glow O'l Burner Corp.: Announcement was made of the appointment of Richard W. Secor, as vice-president of the Industrial Heater Division in charge of portable heater sales.





AS USED BY:
Park City Homes, Rege Park, N. Y.
Owner: Carol Mgt. Corp., N. Y. C.
Contractor: Corbetta Construction Co., Inc.

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BUILDING and CONCRETE
SPECIALISTS

REINFORCED CONCRETE ACCESSORIES

Precision manufactured units to provide you with greater operating efficiency. Carefully designed and engineered to assure maintenance of the well-known high standards of Conver dependability.

- CONTINUOUS HIGH CHAIRS. Support continuously the top slab reinforcement and also the bent up bars around beams, girders and columns. Does away with temperature bars. Specifications, legs to be #5 wire up to 4", #4 over 4" to 6", #2 over 6" to 9", #0 height over 9". Top wire #2 from 2" to 6", #0 over 6" high.
- SLAB BOLSTER. #4 tep wire, precision corrugated 1" on center, to assist the steel setter in placing bars. #7 wire legs, 5" on center for 34 height. Over 34", #5 legs. Stocked in 5'-0" lengths.

For additional information on our full line of building and concrete specialties, write for the free current, detailed CONVER Caralog. Just fill in and mail coupon below.

CONVER STEEL & WIRE CO., Inc. 400 E. 132nd St., N. Y. 54, N. Y.

Please send complete information on CONVER Building Aids.

Address

City____Zone__State___

BAY CITY

3/4-YARD SHOVEL
handling 800-1000 tons
blasted rock per day
for the
CATSKILL MOUNTAIN
STONE
CORPORATION

"Our BAY CITY Model 45 shovel with ¾-yard rock type dipper not only averages 800 to 1000 tons of blasted rock per 10-hour day in feeding the crusher, but it also sorts out stones weighing up to 6 tons for secondary blasting," says Mr. W. H. Peckham, President of Catskill Mountain Stone Corporation. BAY CITY doubled the daily production over a former light duty ¾-yard shovel, proving once again that for heavy duty work there's nothing like the tough, powerful BAY CITY. It has double dipper sticks, 3-part line, a 6-foot rotating path, helical cut gears, separate shafts and bearings for each hoist drum, and it is powered by a big 517 cubic inch Waukesha engine. These specifications compare favorably with many 1-yard shovels. Get complete information on the BAY CITY 45 from your BAY CITY dealer.



Write for these catalogs describing BAY CITY Crawlers of ½ yards and up, BAY CITY Crane Mobiles and CraneWagons in capacities to 25 tons.



BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN
SHOVELS • CRANES • HOES • DRAGLINES •

Page 158 — Construction METHODS and Equipment — October 1954

WHEN THE GOING

TOUGH! Using Rear Steer to angle the bulldozer blade and spill the material over the side of the fill. Impossible with any other grader-bulldozer.

YOU NEED THE POWER AND TRACTION OF AUSTIN-WESTERN'S ALL-WHEEL DRIVE

Good going or bad . . . earth, stumps or rocks . . . this fast, hydraulically operated bulldozer can do work far beyond the range of such an attachment on an ordinary motor grader, thanks to the extra power of All-Wheel Drive and super-maneuverability of exclusive All-Wheel Steer. By swinging the rear end of the grader to right or left, the machine can be used as an angledozer.

The bulldozer blade is of welded steel construction, heavily built and reinforced to handle successfully work of the rough-andtumble variety pictured on this page, and move maximum amounts of material when the going is easier.

There is constant or intermittent need for a bulldozer on many road construction and heavy maintenance operations. On rugged Austin-Western Power Graders, this attachment eliminates the necessity of tying up extra equipment for the occasional job; is an essential on many jobs and a time and money saver on dozens of others.



Power Graders · Motor Sweepers Road Rollers - Hydraulic Cranes Construction Equipment Division



Manufactured by

AUSTIN-WESTERN COMPANY

Subsidiary of Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.



RESULTS OF AN INTELLECTUAL REVOLUTION . . .

"The Western Miracle" Continues ... More Automatic Controls for Industry

Within recent weeks three new monthly technical magazines devoted to automatic control systems for industrial processes and machinery have offered the public their first issues. One of these is CONTROL ENGINEERING, a McGraw-Hill publication.

What has caused this surge of interest in the design and application of automatic control systems? What does it portend for the future of American industry? More important, what does it promise for the American standard of living, of which industry is and must be the servant? And what is the role of CONTROL ENGINEERING in this development? It is to those questions that this statement is addressed.

A New Intellectual Revolution

It is frequently asserted that we are now in the throes of a new industrial revolution. The revolution is described as the eliminating of wasteful applications of human labor to repetitive tasks through new technology which makes it possible to transfer those tasks to automatically controlled machinery.

It is perhaps more accurate, however, to say that we are the beneficiaries of a new intellectual revolution in the application of science to industry. This new intellectual revolution points the way toward giant strides in the continuing process of taking dull and laborious work off the backs and minds of men and transferring it to machines operating in large batteries under automatic control.

The practical engineering work required to convert this intellectual revolution into a fullscale industrial revolution, however, in large part still remains to be done. It is to this task that CONTROL ENGINEERING will be devoted. Its role is that of bridging the gap, in engineering and economic terms, between the new conceptions of automatic control of industrial processes and their practical workaday application. These conceptions run the full gamut from systems of control for automatic factories making heavy industrial products to highly personalized systems of automatic control to warn people when they are approaching the broiling point in sunning themselves at the beach or becoming too drowsy to drive their cars safely.

Enter the "Feed-Back" System

Enough work has been done to move these conceptions out of the realm of interesting dreams and into the realm of practical possibilities, and in some cases into the realm of practical realities. Crucial parts of this work were done during World War II when weapons were successfully equipped with "feed-back" systems

that automatically corrected mistakes made by the weapons in locating their targets.

The principle of the "feed-back" system is as ancient as the personal monitor that tells us not to run into each other as we walk along the street. It feeds back to our locomotion machinery the warning of a collision ahead. But the application of the principle to weapon control and then to more general machinery control required superlatively imaginative and skillful scientific development.

When a "feed-back" system that monitors an automatic process and keeps it lined up precisely is teamed up with a computing machine, capable of making lightning calculations that control both what goes into the process and what is done with the product, the horizons of automatic control become broad indeed. But in large part they still remain horizons. A vast range of practical engineering work remains to be done to realize anything like the full potential of automatic control of industrial processes and machinery.

More and Better Jobs

There are those who view the surge of interest in automatic control with alarm. They conjure up a situation in which automatic processes will at once expand the ranks of the unemployed and reduce many of those still working in industry to the status of robots or automatons.

A look at the record of the American economy — a record of amazing growth, steadily improving job opportunities and a constantly rising standard of living — demolishes the basis for such fears. The introduction of new and more efficient industrial machinery and processes obviously cannot be accomplished without creating some disturbance for some individuals and some companies. But consistently the longer range effect of such local and temporary disturbance has been more jobs and better jobs for Americans.

It is no accident that, while the proportion of industrial wage earners in our population is virtually the same as it was in 1920, the proportion of professional and salaried workers has doubled. The proportion of unskilled workers, furthermore, has dropped by half. This has been an essential part of a continuing process by which drudgery has been transferred to machines while the workers who formerly did the drudgery have been graduated to jobs calling for greater competence and providing better pay.

Higher Living Standard

A British historian, H. J. Hancock, has referred to this general process as "the Western miracle"—that of providing an ever higher and higher standard of living for more and more Americans. The key element in this miracle has been more and more reliance on power-driven machines to get the day's work done.

In the nature of the extremely complicated apparatus involved, full development of systems which have passed through the "think stage" into the status of practical possibilities will be a time-consuming process. It will also be a very exacting process, calling for a tremendous application of engineering skill and ingenuity. However, the engineers who are concentrating on this difficult, workaday phase of the development of apparatus for automatic control will be inspired by the knowledge that they are making a crucial contribution to technical progress which holds great promise of good for the American people.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald CMcGraw PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.



help build famous Ohio Turnpike

"Light weight with strength!" That's a basic principle of the LeTourneau-Westinghouse Company, Peoria, Illinois, when it comes to the construction of their high-speed, big-capacity earthmovers. And that's why USS Man-Ten High Strength Steel was selected for use on the new TOURNAPULL—shown here at work on the Ohio Turnpike, the nation's newest "super road."

The Engineering Department at LeTourneau-Westinghouse says, "... the change to Man-Ten Steel was made in order to obtain maximum strength at a critical point on the yoke tube. LeTourneau-Westinghouse machines are built on the basis of elimination of unnecessary deadweight and maximum use of engine power for carrying pay load instead of deadweight."

This is just another example of how USS HIGH STRENGTH STEELS are used by construction equipment manufacturers to make their earthmovers more productive, more durable and less costly to operate and maintain.

USS MAN-TEN, USS COR-TEN and USS TRI-TEN Steels strongly resist wear, and impact. They have a yield point 50% higher than carbon steel. With these superior steels it is possible to build maximum strength and tough-

ness into vital parts ordinarily prone to failure. With them you can materially increase the strength of parts without increasing their weight. Or you can use USS Man-Ten, USS Cor-Ten and USS Tri-Ten in lighter sections to reduce weight without reducing strength.

Contact our nearest office and let us show you exactly how you can apply USS HIGH STRENGTH STEELS to make your equipment able to do more work with less downtime for maintenance and repairs. For 20 years our engineers have cooperated with manufacturers of the best construction equipment in applying these steels.

UNITED STATES STEEL CORPORATION, PITTSBURGN · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGN · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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USS HIGH STRENGTH STEELS



4-180





Saves 28% on cost ... cuts steel 21% WITH LINCOLN WELDED DESIGN

Rigid frame design, fabricated by welding has saved \$41,246... 28% on the cost of this industrial building. 21% less steel was needed than would have been required in a riveted building.

Originally, pitched roof trusses were contemplated. To save fabricating time, a design using continuous girders over column was developed using 30" depth beams of varying weights over the spans.

Of 5 bids submitted, the low bid was \$26.00 per ton less for welding than for riveting.

MOST STRUCTURAL WELDING IS DONE WITH LINCOLN "SHIELD-ARCS"

There must be a reason why!

Here's why the Lincoln "Shield-Arc" is the standard of comparison for arc welders:

- 1. "Shield-Arc" delivers any type of arc... not just one or two types.
- 2. "Shield-Arc" delivers constant output of current, regardless of line voltage fluctuations.
- 3. "Shield-Arc" welders are constantly improved to weld faster ... at lower and lower costs.

GET LATEST FACTS on cutting your welding costs. Send for Bulletin 1337, available by writing on your letterhead to:



HOW TO DESIGN FOR LOW COST

Calculations, procedures and relative costs for welded studies are in

Lincoln "Studies in Structural Arc Welding", available by writing on your letterhead.



THE LINCOLN ELECTRIC COMPANY

DEPT. 2705 . CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT



Pump is one unit in . . .

Quick-Change Tool Package

A MANUFACTURER finally has done it:— Built into one portable assembly an electric generator, air compressor, high-capacity pump and spraying unit. Change-overs from one operation to another are made in 60 sec, without tools.

Contractors should really be interested in the Power Slave, because, first, it cost about 50% less than the total of all the machines it replaces. More important, this pioneer unit can provide the source of power for just about any of the small tools a contractor would normally use on a job.

The Power Slave, manufactured by Master Mechanic Mfg. Co., Burlington, Wis., comes in two models. Model 60 is equipped with a 6-hp engine, and the smaller Model 25 comes in 2½-hp capacity.

• Generator—When used as a generator, the Model 60 has a capacity of 2,500 w. It will operate simultaneously, any two power tools such as electric hand saws, drills, routers, planers and pipe threaders. It will handle with ease one radial saw, masonry saws and electric vibrators for concrete work. It will put out enough power to light 25 100-w bulbs.

Operation of the generator is entirely automatic. It snaps into place by a lock and lineup mounting base. Simply start the engine and plug in the load. There are no adjustments of any kind.

Model 25 produces 1,200 w., suf-(Continued on page 166)

HORSEPOWER

for every need

Whether it's repowering old equipment or buying new — too much or too little horse-power can prove costly. Equally as important as proper horsepower, is correct engineering of the application. Quite often, it is necessary that engine accessories be mounted in accordance with requirements of the equipment. It usually takes a right size and right design to supply the specific power needs for each type of machinery.

The engineering and sales policy of Hercules Motors Corporation is to design and sell internal combustion engines to fulfill the specific needs of each customer. For example, in equipment with limited engine installation area, "flat" or horizontal engines are often the answer. These engines can be placed under floors, or in any area which does not permit vertical installation. (Consult factory for models available.) Special Hercules vertical engines with accessories located on one side, permit installations near a firewall or bulkhead which is permanent and does not allow access to one side of the engine. These are but a few of the many problems which are often encountered in the proper application of an engine.

Our basic line of Hercules engines, 70 models from 3 to 500 H.P., is designed and engineered to meet the exact and varying demands of industry. We build engines for operation on gasoline, diesel fuel, natural gas, L. P. Gas, kerosene, or any other standard fuel that is readily available. That's why we have been known as "Engine Manufacturing Specialists Since 1915"

If you'd like to know more about our engines, write for the folder "Hercules Engines". It lists the sizes and power ratings of each model. If, however, you have a specific power problem give us the details. Our engineers will work with you to solve your problems and of course, there is no obligation.

Engine Specialists since 1915



2 cylinder gasaline engine



Hercules Model DOOD 4 cylinder diesel engin



Hercules Model JXD 6 cylinder gasoline engine



Hercules Model DIX6D 6 cylinder diesel engine



Hercules Model HXE 6 cylinder gasoline engin 236 H.P.



Hercules Model DFXHF 6 cylinder diesel engine 240 H.P.



Hercules Model DNX-V8DTS 8 cylinder diesel engine



HERCULES ENGINES

HERCULES MOTORS CORPORATION

111 Eleventh Street, S. E. . Canton, Ohio



ROUGH STUFF AT THE CROSSING, like this sad example, cannot be passed off as just another unfortunate mishap. These accidents can be prevented with practical, hardheaded controls that eliminate nasty lawsuits and bad publicity where everybody loses.

How to Protect the Traveling Public When Building Roads (No. 3 of a series)

CONTROL MATERIALS AND EQUIPMENT — Good house-keeping for materials and well supervised equipment movements will minimize damage claims rising out of injury to persons and destruction of property.

Operational negligence is responsible for more than one-half of the accidents reported from road jobs. Trespassing on abutting private property, lack of impartial supervision, haphazard and usplanned storage of materials, equipment parked improperly, driving too fast for prevailing conditions, and poorly maintained detours are cited over and over again as contributing to accidents.

Plan the Advance

To be most effective, accident prevention should become a definite part of advance operational planning and have the full backing of top management. Consideration must be given to:

- Establishing storage areas and limits for construction shacks, tools, forms, scaffolding, reinforcing steel, aggregates, cement, asphalt, blasting supplies, tarpaulins and all other contractor's items.
- Proper disposal of trees, stumps, brush and discarded material in dump areas away from private property or a traveled right-of-way.
- Preparing low-exposure routing for construction equipment on the job site, between construction area and batching plant, borrow pit, rail head or other supply points.
- Selection and training of equipment and vehicle operators through a sound, well planned program.

- Traffic Control devices such as signs, barricades, channelization, night illumination and trained watchmen to protect the public and assure job traffic control.
- Laying out off-street parking areas for employee vehicles and contractor's equipment.

Advance the Plan

Effective, impartial supervision can be obtained only when supervisors and foremen are aware of the need for strict and continuous application of the correct operational procedures. They must enforce:

- Established driving speeds for equipment, loaded and empty, on grades, curves and tangents,
- Preventive maintenance and inspection of equipment on a regular, periodic basis.
- Making equipment inoperative and secure during temporary shut-downs on a job site.
- Use of vehicle clearance lights, flare pots and other aids to visibility during the hours of darkness.
- Erection and maintenance, with all the necessary flexibility and regularity, of signs, barricades, and other traffic control devices for guidance and complete protection of the public.
- Blimination of dust, mud, slides, holes and obstacles on areas traveled by the public.
- Removal of materials, jobsite buildings, batching plants, signs and other elements after completion of the job.
- Safe job performance guarantees by subcontractors—for added protection against dam age claims.
- Prompt reporting of accidents involving compensation and public liability.

This article is the third in a Public Safety Series designed to reduce damage claims. If you would like a copy of this complete series, write to Loss Prevention Department, Liberty Mutuai Insurance Company, 176 Berkeley St., Bosten 17, Mass.

TOOL PACKAGE . . .



GENERATOR is right for operating small electric power tools or lights for the job.

ficient to power one of the small tools listed above.

• Pumps—The pumps furnished with the Power Slave are placed into operation by the same method as the generator. They are supplied with pipe fittings and union couplings already in place which fit correspondingly into union couplings on the suction and discharge hoses. To start the pump, you merely place it into position, attach the hoses, drop the suction hose into the water and start the engine.

Two types of pumps are available. Model A pump is a centrifugal unit with a Neoprene impeller, self-priming. It will lift up to 25 ft without any foot or check valve. It has a capacity of 3,000 gph. A similar pump with a capacity of 1,800 gph is furnished for the Model 25.

The second type pump, known as Model B, is a bronze impeller centrifugal self-priming pump, often referred to as "contractors self-priming pump". This type is widely used for excavating pumping because of its man-sized capacity of 15.000 gph.

The Model B pump for the smaller unit has a capacity of 6,000 gph.

• Air Compressor—The air compressors furnished with the Power Slave are placed in operation in in the same manner as the other power equipment—through a lock and line-up base which permit the unit to snap into place with

(Continued on page 169)

UNI-FORM Panels SAVE TIME... CUT LABOR AND MATERIAL COST

SIMPLE ASSEMBLY



EASY FORM CLOSURE



Close forms with 2 Uni-Form Angles and a piece of plywood ... Start stripping here

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An Outside Corner Angle and Panel Loc Clamps form tight, accurate vertical corner . . . no additional tying.

> Rigid Steel Corner forms provide quick...easy...accurate inside corners.

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Alignment and bracing on 1 SIDE ONLY Saves Time... Saves Lumber... Saves Labor...

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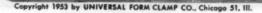
CLEVELAND, OHIO, 24901 Lekeland Bird. • BALTIMORE, MD., 461 S. Montres St. • NOUSTON, TEXAS, 2314 Freston Ave.
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INTERNATIONAL four-wheel-drive trucks bring to construction men and contractors entirely new 4x4 performance and efficiency. These new four-wheel-drive trucks combine famous International stamina, long life, and operating economy with everything that's new and best in 4x4 design.

A two-speed transfer case affords eight forward and two reverse speeds, permitting movement of men, tools, and equipment over all kinds of terrain. Two transmission power take-off openings allow operation of front-mounted winch, hydraulic hoist, or other auxiliary equipment. There is provision for mounting a third power take-off on the transfer case.

INTERNATIONAL 4x4 trucks have everything it takes for tough construction assignments, plus extra easy steering and handling, famous driver-designed Comfo-Vision cabs. Study the extra-value facts shown here, then get complete details from your INTERNATIONAL Dealer or Branch.

INTERNATIONAL HARVESTER COMPANY . CHICAGO

America's Finest Four-Wheel-Drive Trucks

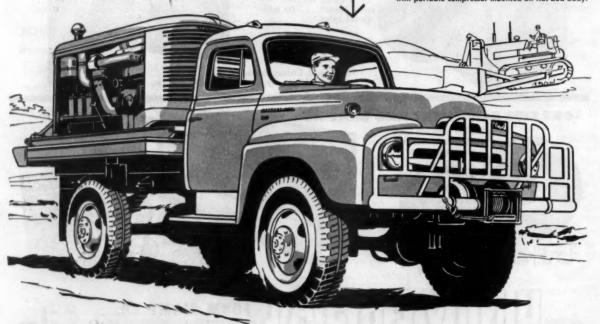
Two chassis models: Model R-140 (4x4), 130- and 142-inch wheelbases, GVW rating, 11,000 pounds. Model R-160 (4x4), 154- and 172-inch wheelbases, GVW rating, 15,000 pounds.

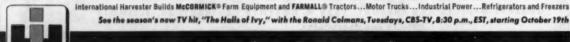
All-truck power: Both models powered by famous INTERNATIONAL Silver Diamond engines.

Transmission: Sliding gear selective type. Four speeds forward, one reverse. Power take-off openings on right and left sides.

Transfer case: Two-speed declutching type, providing eight forward and two reverse speeds, with manual disengagement of front axle for normal two-wheel-drive operation. Three-position shifting —high, 1.00 to 1; low, 1.87 to 1; and neutral. Provision for mounting full torque power take-off at rear of input shaft.

Four-wheel-drive INTERNATIONALS provide new standards of efficiency and stamina for a wide variety of construction jobs. Shown is an R-140 (4x4) with portable compressor mounted on flat-bed body.





INTERNATIONAL TRUCKS

TOOL PACKAGE . . . Continued from page 166



COMPRESSOR IS CLAMPED down on platform next to engine in 60 sec; no tools required.

two Sentry slide pins. Compressor furnished with Model 60 is a twincylinder unit with a capacity of 10 cfm at 900 rpm. This is ample to operate about two spray guns. The compressor also can operate air tools, inflate tires, do greasing, sand blasting, and blowing away of dust and scale.

The compressor supplied with the Model 25 is a single-cylinder unit with a bore and stroke of 2x2 in. It has a capacity of 4 cfm at 900 rpm, enough to operate one spray gun.

· Mounting the Tank-Since the receiver tank is attached only when the air compressor is being used, it had to be readily engaged or disengaged. This was solved by mounting the tank on its own carrier so that it telescopes inside of the main carrier of the Power Slave. The two units are joined together with a lock pin to make one unit. Quick-coupling fittings are used so the compressor can be in-



AIR TANK slides in behind compressor, couples on quickly, is supported by single wheel.

KOHLER ENGINES 4-CYCLE AIR-COOLED K90 3.6 H.P K160 6.6 H.P. K330 11.8 H.P. K660 26.8 H.P. Kohler Engines are engineered and manufactured to the high standards which have made the Kohler mark known for quality the world over. Power for garden tractors, pumps, sprayers, snow removal equipment, grain elevators, hoists, portable saws, concrete mixers, com-K160 pressors, industrial lift trucks. Write for information



PLUMBING FIXTURES . HEATING EQUIPMENT . ELECTRIC PLANTS AIR-COOLED ENGINES . PRECISION CONTROLS



MODEL "B" 10 TON \$1175.*

The following equipment is optional and extra: hydraulic tilt control, two speed winch, electric brakes.

*Plus Freight and Federal Tax

DEPT. C-10-4

Time saved between jobs means more profit on every job. Where large flat bed trailers are usually too cumbersome for fast jump hauling. . . a MILLER Tile-Top is always handy for moving dozers, tractors, etc. Self-movers practically load themselves onto tilted platform and can be towed to the next job in jig time . . cutting non-productive time for operator and equipment to a minimum. Standard oak platform is 8' x 14', optional 16' available.

SEE YOUR DEALER OR WRITE

MILLER RESEARCH, ENGINEERS



Built to <u>Last</u> <u>Longer</u> on the Toughest Jobs!

GOODALL CONVEYOR BELTING

"SUPER TRIPLE-S"

Conveyor Belting at its best . . . for super-severe service. Built to handle crushed stone up to 10" and other highly abrasive bulk materials, wet or dry, particularly on long center hauls where tension is high and extreme flexibility is required. Weather-resistant cover. Tensile strength, friction and other details determined by specific requirements.

"TRIPLE-S"

Designed for severe service but where weight of bulk material and length of carry do not demand "Super-S" quality. Recommended for crushed stone up to 6" or 8", abrasive ores, etc.

"LACROSSE"

A perfectly balanced, quality belt for all but the most severe conditions. Used for handling sand, gravel, shells, ashes, etc.



GOODALL MUCKER BELTS

"Wear King" Brand. Developed especially for use on Conway Mucking Shovels in tunnel excavating, and employed on most of the largest modern tunnel jobs.

GOODALL GRADER BELTS

"76" Brand. For many years, the Contractor's best assurance of long, trouble-free service on heavy-duty Elevator Road Graders.

Contact Our Nearest Branch for Catalog, Details, Prices

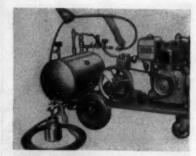


GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J. Brunchee Philadelphia - New York - Boston - Pinhburgh - Indianapalis - Chicago - Detroit - St. Paul Los Angeles - San Francisco - Seattle - Spokane - Partiand - Soit Lake City - Denver Houston - Goodalil Rubber Company of Conade, 1nd, Toronto - Distribution in Other Principal Cities



Continued



LIQUID SPRAYER grows out of standard compressor. Tank capacity is 12 gal.

stalled, the tank mounted to the unit, and the machine placed in operation, all in less than 50 sec.

The tank has a built-in agitation system, with high-and-low-pressure outlets.

When the tank is used as a liquid receiver for a spraying operation, the material hose is transferred to the liquid discharge valve. A constant head of air pressure is imparted to the contents of the tank by the compressor and forced out under pressure through the liquid discharge valve to the spray nozzle. This principle of spraying eliminates the necessity for a pump and is particularly helpful when spraying corrosive materials, since there are no moving parts in contact with the spray fluid.

The tank is made of welded steel and has a capacity of 12 gal. sufficient to spray for 2 hr. Contractors who do concrete or masonry work will like this big capacity for spraying oil on concrete forms, oil emulsions on newly laid pavements or spraying water on masonry wall.

Cover Circular Saws

The AGC of Memphis reminds contractors that circular cross-cut and rip saws should be fitted with a hood that covers the saw at all times to at least the depth of the teeth. The hood should adjust itself automatically to the thickness of the material being cut. And it must remain in contact with the material at the point where the stock encounters the saw. A fixed guard may also be used, providing the space between the bottom of the guard and the material being cut does not exceed % in. at any time.

The Swing's The Thing FOR FASTER LOADING!

Pettibone SPEED SWING 180° Boom Cuts Loading Time Up To 25%

Ever consider the extra profits you could make getting material loaded faster? A whole new, time-saving, space-saving loading concept is being practiced by cost-conscious contractors and governmental units who are using Speed Swing. It loads faster, in less space, to the left or right, without moving from its short, single working line (see diagram below). Ask for free demonstration!

All This Plus Torque Converter Power





Longest Forward Reach of Any Loader! 5 ft. 4 in. reach from tires at 7 ft. dumping clearance also permits loading trucks far forward.

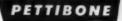


30° Bucket Till-up! Full loads are assured every time. 4 wheel drive, big flotation tires, and torque converter produce powerful crowd.



Powerful Down Pressure! Never any worry about holding grades. Boom may be placed in float control position for leveling.







SPEED SWING



Another Member of the Labor-Saving "Speedy" Material Handling Family!

PETTIBONE MULLIKEN CORP. 4700 W. Division • Chicago 51 • Spaulding 2-9300



Safety-Beam Guard Rail on Pennsylvania Tumpike near Reading

The above picture, taken along the Pennsylvania Turnpike, shows four strips of Bethlehem Safety-Beam Guard Rail. At the left, Safety Beam is protecting vehicles from a steep drop. In the center, a double line of Guard Rail forms a continuous impact-absorbing medial-strip divider. At the right, motorists are protected by Safety Beam installed on a dangerous curve.

Bethlehem Safety-Beam Guard Rail is made of sturdy sections of steel plate, bolted together on steel, wood or concrete posts. It bolts flush end-to-end, making one continuous beam, a factor which greatly simplifies installation on sharp curves.

What's more, Safety-Beam is easy to install, even by unskilled labor. No end anchor rods, special tools or complicated adjustments are required.

For more information about this and other steel products for highways, call the Bethlehem Sales Office nearest to you, or write direct to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM STEEL

Besides protecting motorists at highway danger spots, Safety-Beam Guard Rail is used effectively in other protection-giving applications.



Parking garage roof in Atlanta, Ga.

Protected walkways for passengers at Shreveport, La., Airport.



Check List Helps In Care of Hose

LONGER LIFE and better performance will result with planned care of rubber hose, an item found on the equipment list of every contractor. It also is good policy to be specific when buying new hose—to insure getting the right material and size for the job.

The hints below are suggested by J. A. Miller, executive engineer of the Thermoid Company.

- Materials carried should influence selection of type. For example, where hose conveys any type of petroleum product, the tube should be compounded to resist attack by oil, grease or gasoline. There are special types for paint, insecticides, dilute acids and solids.
- Hose size is important. The inside diameter must be adequate to do the job. Too small a hose means excessive pressures and usually not enough capacity. Too large a hose increases costs, creates irregular flow.
- Pressure requirements should be studied. Can pressures be reduced so that more economical hose can be used? Is pressure constant? Is it negative or positive? Suction hose requires a spiral or ring-type reinforcement.
- Temperatures must be watched. High temperatures require special hoses and the same hose should not be subjected to both hot and cold materials
- If solids are carried, what are their relative size and abrasiveness? And, if solids are carried in a corrosive liquid, the tube must be compounded to resist attack.
- Observe bending radius limits of hose. As a general guide, radius is approximately 1 ft for every inch of inside diameter. Hang in large loops over saddle-type supports—not small supports, such as nails.
- Be moderate in length. Hose must be long enough to prevent stretching, but too much runs up the cost and encourages snags and kinks.
- Twisting tends to separate reinforcing material, may weaken the structure, is most critical in short hose lengths.

(Continued on page 174)



BETTER BUILDING CONSTRUCTION!
This job called for high degree compaction. The Barco Rammer did it at the rate of 1 to 1½ square yards per minute with 12" to 20" lifts and handled from 160 to 240 cu. yds. per 8 hour day.



CUTS TRENCH COSTS! Using lifts up to 24", this Rammer finished backfill in 18" trench at a rate of 360 to 600 feet per hour for quick completion of job and no cost for additional backfill.

For the LOW BID on any job, figure your costs with BARCO

BARCO

RAMMER

SOIL COMPACTION is here to stay! Specified Compaction is now accepted practice on all modern construction projects. The BARCO RAMMER gives you specified compaction on these jobs at very little extra cost. Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE:

- Better work! Easy to meet specifications calling for 95% to 97.5% (modified Proctor) compaction.
- Ideal for work in restricted areas: inside buildings, close to walls, culverts, and abutments—in trenches, ditches.
- Faster compaction! 20 to 30 cu. yds. per hour—day in and day out.
- One man operation! Completely self contained; no auxiliaries needed.
- Low operating cost. Low initial cost.
- SAFE! Simple to operate. Operators like Barco Rammers.



ASK FOR A DEMONSTRATION

— See for yourself—ask for our nearest distributor to give you a demonstration. Catalog No. 621 on request.

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NOW! QUICK DELIVERY FROM FACTORY STOCK!

October 1954 — Construction METHODS and Equipment — Page 173



When the scraper is equipped with a carrier and is used with a track cable, machine range is limited only by the spooling capacity of the hoist drums. So equipped, it can reach farther, extend deeper under water or take material out of soft areas without the nuisance of mats.

To find out how much you can increase your dragline capacity, tell us the make, model number and boom length on your machine. We will then determine the largest scraper your crane can handle and give you our recommendations.

For more information, send for:

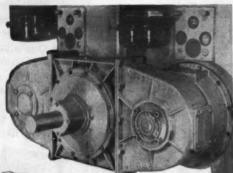
Field Report 219: How to Make a Boom Machine Reach Farther and Dig More; and Catalog J: "Crescent Scraper Buckets.

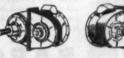


580 S. Clinton Street, Chicago 7, Illinois

These standard interchangeable combo-power units will save you thousands of dollars.

When you repower your equipment eliminate large, costly, hard to service engines. Replace with smaller, low-cost engines compounded with FUNK POWER ACCUMULATORS. 2, 3 or 4 engines are combined with torque converters. Additional shafts or clutches may be provided at crank-shaft centers, or equipped with right-angle drives or gear reductions in a variety of ratios. Other combinations include POWER DIVIDERS and EXTREME SIDE LOAD POWER TAKE-OFFS. lavostigate!





BEFORE YOU REPOWER OR RE-DESIGN WRITE FOR CATALOG DESCRIBING THESE AND OTHER UNITS.

FUNK AIRCRAFT CO.
3303 AIRPORT DRIVE
COFFEYVILLE, KANSAS

ower units

HOSE CARE . .

- Cycles of operation affect hose life. Is it in constant, even-going use, or are there periods of rough use and periods of idleness? Is it left in the sun for long periods? Is it dragged from place to place? Hose should be bought to meet known conditions and stored carefully indoors when out of service. Quick disconnects will eliminate some forms of rough handling.
- Correct couplings, properly installed and maintained, are another check point to achieve greater economy. Here is a source of leaks.
- Accidental damage takes a great toll on hose. Protect it against falling rock, vehicle crossings and contact with sharp and heavy tools.

Does Money Matter?

IF MONEY IS important to you, be sure to send a representative to the Construction Section meetings during the National Safety Congress, Oct. 18-22 at the Conrad Hilton in Chicago. Better yet, join him yourself.

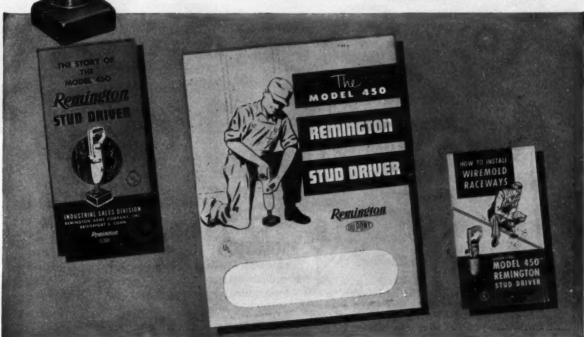
There you will find a multitude of sound ideas to help prevent accidents, and thus save money. Accidents are expensive enough in themselves. But they can also louse up a good experience rating and increase your insurance costs.



FOOTING HOLES for Toledo power plant are dug through sticky gumbo by Gar Wood Foundation Borer. Local contractor, A. Bentley & Sons Co., sinks 5x65-ft hole in 8 hr.

Read how the REMINGTON STUD DRIVER cuts fastening costs!

Free booklets show where powder-actuated tool can be profitably used



THE STORY OF THE REMINGTON STUD DRIVER.

Here's an easy-to-read illustrated booklet that shows you how the tool operates and points out its important features. You'll see close-ups of the Stud Driver in use, securing structural channels, furring strips and many other fittings to steel and concrete surfaces. THE REMINGTON STUD DRIVER. A complete catalog—it shows actual-size drawings of the Remington Studs available. Another section deals with the special guards for the tool used to fit over lathing sections, flexible framing sections, wood sills and other sections and fittings.

THE WIREMOLD SYSTEM. It's a specially prepared booklet that describes anchoring Wiremold channels with a Stud Driver. A special Remington guard is available for this application. This booklet takes you step by step through the entire Wiremold Raceway & Wireway installation system.

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How DUKE POWER COMPANY



Two WHITE tandems move 300,000 lb. transformers



(A) LOADING UP this bulky load is a mean job. Here the transformer is moved onto the low-boys pulled by two husky White Model WC2864's, ready to go!



(B) ON ITS WAY, the huge transformer moves by White Mustang Power to the station ½ mile away. Plenty of Mustang Power here!



(C) MISSION COMPLETED, the rugged Whites stop at the end of the trip, turn the 300,000 lb. transformer over to the riggers.

PROBLEM: To move two 300,000 lb. transformers to a new station of the Duke Power Co., Spartanburg, S. C., not accessible by surfaced road or spur track.

SOLUTION: Two White Model WC2864 Tractors with low-boy trailers handled these big loads without delay or difficulty. Operating side-by-side, from siding to plant site, these rugged Whites had plenty of power... dependable all the way.

FOR YOUR REALLY BIG MOVING JOBS...

See your White Representative for latest power equipment news as it pertains to your business. New White Trucks save time... cut costs... get more work done because they are exactly tailored to actual job needs. Call or write today for facts.

Cleveland 1, Ohio



FOR MORE THAN 50 YEARS
THE GREATEST NAME IN TRUCKS

On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

Welfare Funds

ADMINISTRATION OF UNION welfare funds takes the spotlight as investigators dig into financial transactions involving millions of dollars. The New York State Insurance Department, authorized by a new state law to investigate records and practices of union welfare funds (CM&E May, p 155), has come up with a preliminary report after delving into 135 such funds. It found 21 "badly run," 41 subject to "serious criticism" and 73 "really good." Here are some examples of what the investigators found:

- Use of fund for new jobs and salaries for those running the union;
- High ratio of expenses to contributions—one example being a fund with contributions of \$250,000, premiums of \$100,000 and expenses of \$80,000;
- Use of funds for loans to the union rather than being held in trust;
- Discrimination in insurance benefits—there was one case where union and fund officials were covered by over \$10,000 of life insurance with ordinary union members being insured for only \$3,000;
- 5. Excessive fees paid to lawyers;
- 6. Poor records kept of the funds;
- Failure of employer-trustees to face up to their responsibilities.

One flagrant case, not involving a building trades union fund, was found where 75% of the fund's assets were used to purchase a vacation area to develop a resort. It failed and left the fund bankrupt. However, spokesmen for the New York State investigators indicated that many of the union officials acting as trustees have a real sense of their responsibilities, and a great many of the funds are soundly administered.

(Continued on next page)



Our Hartford Contractors' Equipment policy
paid us \$8,269.02 (Based on Company File #HM53-2037)

We were wrecking an old bridge to make way for a wider one.

The structure appeared sound. So we brought up our 32-ton crane, and used it for removing the bridge deck.

That wasn't such a bright idea. We'd hardly started when the abutment under the rig collapsed with a roar. The operator jumped clear as the machine toppled into the river.

It cost nearly \$900 to get the machine to a shop for repairs. And over \$7,300 more to fix it up. Under our Contractors' Equipment policy, the Hartford Fire Insurance Company paid these bills — a total of \$8,269,02.

Who'd pick up the tab if one of your machines "fell in"?

Or was burned? Wrecked in a collision? Buried under a landslide?

Not you—if you had the broad protection of a Hartford Contractors' Equipment policy. It covers your equipment on the job . . . while being moved from one job to another . . . while idle between jobs. It saves you from loss caused by collision, overturn, explosion, theft, windstorm and many other hazards.

The cost of making sure you have cash when you need it for repairs or replacement is very reasonable. Get full details today from your Hartford Fire Insurance Company Agent or your insurance broker.

Year in and year out you'll do well with the

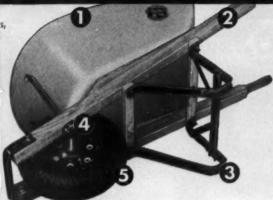
Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company

Hartford Live Stock Insurance Company • Hartford 15, Connecticut

BUCH #154 is the Contractor's Standard

- 1 Sturdy steel trays, reinforced edges
- 2 One-piece hardwood handles
- 3 Pre-formed runner type shoes
- 4 Cold Rolled Steel axle, perfect wheel alignment
- 5 Buch Master Welded Wheel. Plain, ball or roller bearings



BUCH Contractor's Barrows are built to do a job . . . and they do it. The 154 offers large tray capacity, perfect balance for easier moving and BUCH's famous one-piece tray. Available with either hardwood handles or tubular steel handles. Send for leaflet on BUCH Contractor's Barrows.





Better-Built Barrows for ALL INDUSTRIAL MOVING

BUCH MANUFACTURING COMPANY . ELIZABETHTOWN, PA.



Ideal for — Offices • Drafting Rooms • Paymasters • Timekeepers • Engineers and many other uses conforming to the contractors' particular needs.

Mobile Offices come equipped with drafting tables, desks, lavatory, air conditioning (optional), heater, etc., and can be equipped to your specifications. Units are built for rugged use and are priced from \$1595.00 to \$3995.00. Many of these units are being used by leading contractors throughout the U. S.

Write today and get the complete facts on how mobile units can work for you.

MOBILE OFFICE, INCORPORATED

7300 Stony Island Avenue, Chicago 49, illinois PHONES DOrchester 3-1048-9

LABOR . . . Continued from page 177

Meanwhile, George Meany. President of the AFL, has much to say at the AFL convention at Los Angeles on racketeers who have used these funds for their personal gain. He is scheduled to present a plan for AFL affiliates to adopt in order to prevent abuses. Dave Beck, president of the teamsters, asserted that employer-trustees should go to jail along with union officials in proved cases of welfare fund frauds. Many of his locals are now under fire from congressional investigators.

As to what can happen when employer-trustees face up to their responsibilities seems amply demonstrated at Geneva, N. Y., where all jobs being performed by the two employer representatives on the laborers' welfare fund Board of Trustees have been struck because they refused to sanction placement of the insurance with a company allegedly favored by the union representatives on the Board. The insurance company in question did not furnish the low bid when quotations were received from a number of companies.

It is undoubtedly true that in some cases employers have turned their backs on many practices followed by fund administrators because of the fear of retaliation against their companies. However, this does not relieve them of their position of trust. If you are a trustee you had better make it your business to see how the fund is being administered, policies being followed with respect to placement of insurance, investment of excess funds, etc.

Carpenter-Machinists Peace Pact

It looks like one of the oldest and costliest of jurisdictional fights has been settled. Under a recently announced agreement between the United Brotherhood of Carpenters and the International Association of Machinists you may not, in the future, be exposed to a serious jurisdictional strike when installing machinery.

The plan establishes a formula for dividing control of millwrights and sets up an arbitration plan to be invoked when disputes arise over enforcement of the pact.

Pending issuance of details on how the plan will work, follow your previous practice when installing machinery.



CONSTRUCTION EQUIPMENT NEWS



New Adams Motor Grader

Known as the 330, this is the new Adams motor grader powered by 75-hp International diesel engine. It uses a 12-ft blade and weighs in the neighborhood of 20,500 lb, depending on equipment. The 330 is the latest of several new and improved models which Adams had introduced recently. Other models have been the 660 with 140 hp; the 550 with 115 hp and the 440 with 85 hp. Optional equipment is available including power-shifted moldboard, bulldozer, scarifier and snow-removal equipment. El-vating grader attachment is available for the larger machines.

—J. D. Adams Mfg. Co., Indianapolis, Ind.



Tire-Jumbo Size

This giant tire called Royal Con-Trak-Tors weighs 2,600 lb, stands 8 ft tall and contains enough nylon to make 3,000 pairs of women's stockings. Designed for earthmoving equipment, the tire is 30.00-33 in size and has a 40-ply rating with a tread of 3½ in.—U. S. Rubber Co., New York, N. Y.



New All-Weather Cab

This all-weather, molded steel cab is available for all models of the Michigan Tractor Shovel. Designed for field installation, the heavy-duty cab has all-around and overhead vision through safety glass windows set in rubber molding. The rear section, which has sliding windows, rolls freely on track and can be removed in 5 min. Operator comfort was kept in mind, as the overhead glass is tinted to eliminate glare, and the cab is insulated to deaden sound. Weight of cab is 275 lb.—Clark Equipment Co., Benton Harbor, Mich.



3-Yd Bucyrus-Erie

This 3-cu yd Bucyrus-Erie shovel is convertible to dragline, clamshell or lifting crane. It's powered by 6-cyl GM diesel with Torcon torque converter. The 71-B model uses features of the company's other line of excavators.—Bucyrus-Erie Co., S. Milwaukee, Wis.

On-the-Job Previews of Machinery, Tools and Equipment



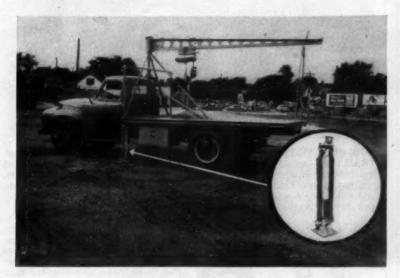
Portable Single Pass Plant

Two sizes of low-cost gravel or rock on jobs where material does not have to be accurately graded are possible with this Cedarapids single-pass portable crushing plant. Loading hopper is 6x6 ft with sloping bar grizzly with 7-in. openings; an 18-in. reciprocating plate feeder; a 2x6-ft inclined vibrator screen; a 10x24-in. roller-bearing jaw crusher; 24-in. by 25-ft channel frame delivery conveyor; 14-in. by 20-ft sand conveyor and a 36-hp engine. The entire plant weighs 24,500 lb and is mounted on rubber-tired full-trailer. Production is from 40 to 75 tons per hr.—Iowa Manufacturing Co., Cedar Rapids, Iowa.



Welding Made Easy

This new self-welding method is quick, fool-proof and easy. It employs a special welding electrode and holder. The tip of the electrode is held against the metals to be joined, a switch turned on to fire the electrode, and the entire process becomes automatic.—The Lincoln Electric Co., Cleveland, Ohio.



Hydraulic Jack Out-Riggers

The Bros Magic Muscle concrete block handler is now equipped with power operated hydraulic jack out-riggers, which it's claimed give perfect load control. Jacks are positioned on each side or at forward corners of the truck bed, depending upon location of boom and mast. Power to operate these jacks is supplied by a hydraulic power pack, located in the electric generating plant compartment of the unit. One man can handle 700-lb block loads.—The Wm. Bros Boiler and Mfg. Co., 1019 Tenth Ave., S. E. Minneapolis, Minn.



Lightweight Magnaflux

This permits portable inspection in shop or field. The operator controls the yoke with one hand, both power control and positioning, and with the other he dusts on the powder. Weighs 30 lb and costs \$185.—Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, III.





ores boles from 4½" to 24" in diameter oder sidewalks, roads, building foundams, railroad tracks, landscaped grounds, c. Fithian Contracting Co., Youngstown, using McCarthy Public Utility Auger tills, completes pipe line jobs, formerly king weeks, in a few days.



Will here 6" and 8" diameter holes 120 seet horizontally at rate of six feet per sinute maximum. Four individual, self-locking jacks maintain correct drilling level. In one day a New Castle, Pa., operator bored holes of various depths totaling \$40 ft. through shale and sandstone, using this McCarthy Auger Drill.



VERTICAL AUGER DRILL

Operating men who have made actual onthe-job tests find the McCarthy Vertical
Auger Drill a standout for mobility, staming, ruggedness and versatility. On a
2-million dollar, 5-mile stretch of superhighmay between Hubbard, Ohlo, and Sharon,
Pa., The Apex Powder Co., Canton. Ohlo,
cut blasting cests approximately 20% as
compared to air, well or churn drilling.
Cutting through two large areas of concentrated rock, 150 holes 15 set deep were
bored for each blasting pattern. 3,000
cubic yards of sand rock were moved at
each blast. Due to the ruggedness and
mobility of McCarthy Drills, there was no
time lest. For further information, write
Salem Tool Co. and our distributor will
contact you.



DRILLING EQUIPMENT SINCE 1901

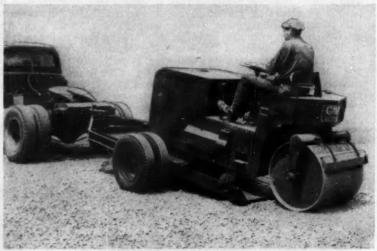
THE SALEM TOOL CO.

765 SOUTH ELLSWORTH AVE. SALEM, OHIO . U.S.A. EQUIPMENT NEWS . . . Continued from page 181



TRUCK MIXER - A new 31/2-yd rocket truck mixer features a hydraulically operated chute control, with permanently attached "flip-flop" chute and heavy-gage light-

weight aluminum detachable extension chute. A choice of industrial engines is available.—Concrete Transport Mixer Co., St. Louis, Mo.



LOW-BED TILTING PLATFORM TRAILERS—An all-new line of bed construction equipment trailers for hauling rollers, tractors, bulldozers, and other small equipment includes five models varying from 1/2 to 5

tons. Complete information about these new trailers may be obtained by writing to Mastercraft Trailers, Inc., 300 Middlefield St., Middletown,



CHAIN REPAIR LINKS-A new product to enable dragline operators to repair drag chains with greater speed is now available from the Electric Steel Foundry Co., Portland, Ore. The new design consists of a change in the method of locking the link connecting pin in place. It is a tightly compressed coil spring that grips the pin, replacing the elliptical collar formerly used.—Electric Steel Foun-dry Co, 2141 N. W. 25th Ave., Port-land 10, Ore.

NEW!

THREADED CONES for SUPERIOR CONE-FAST COIL TIES

Pat No 2,335,336

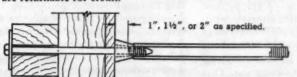
Cuts Form Costs by Permitting
Extra Fast Erection of Panels

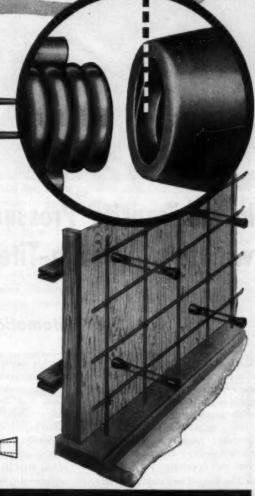


A direct way to cut forming costs is to use new Superior *Threaded* Coil Cones with Cone-Fast Coil Ties. Where cones have to be dependably held in place, *Threaded* Coil Cones are practically a "must".

Previously, Coil Cones were held onto the extended coils by friction alone. Now, a couple of threads in the cone fix Coil Cones securely to the Coil Ties. Here's another advantage . . . units can be bench assembled with the assurance that they will arrive at the installation point intact! Threaded Coil Cones cannot be knocked off the Coil Ties when the opposing form is being applied. When unscrewed with a cone wrench, the threaded Coil Cones automatically back themselves out of the wall.

Cone-Fast Coil Ties with threaded Coil Cones are supplied for 1/2" to 11/4" Coil Bolts, with safe load capacities from 5,000 lbs. to 36,000 lbs. Working parts (cones and bolts) are returnable for credit.





SUPERIOR CONCRETE ACCESSORIES, INC.

New York Office 1775 Broadway, New York 19, N. Y. Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

How to save time on water line installation



Install Transite® Pressure Pipe with the new Ring-Tite® Coupling

Goes together fast, locks tight automatically

CONTRACTORS EVERYWHERE find that Transite Pressure Pipe and the new Ring-Tite Coupling enable them to get in and out of the trench with greater speed than ever before. Typical case histories, as illustrated, prove that important installed savings are made possible with this coupling.

The Ring-Tite Coupling is effecting installation savings everywhere because of its special features. To begin with, pipes are aligned quickly, easily. Coupling design not only provides automatic aligning but also automatic adjustment for expansion. Rubber rings are popped into grooves during assembly, lubricated pipe ends slide in under rings smoothly, easily and surely.

Pipe ends are automatically separated within the coupling. This separation gives the line flexibility to withstand shock and vibration, relieves line stresses, permits conformance to curves.



On this 12" New England installation of Ring-Tite Coupling, the contractor's bid was based on installing 400 feet per working day for the job conditions prevailing. Actual laying time averaged over 700 feet per day!



Actual experience on this New Jersey installation by a prominent water works utility established entirely new concepts of installation savings effected by the Ring-Tite Coupling. On the job shown, 600 feet of pipe were laid in 5 hours.



On this Florida installation a rate of progress as high as 640 feet an hour was achieved—exceeding by far the speed anticipated considering the job conditions.

Like Transite Pressure Pipe, the Ring-Tite Coupling sleeve is made of asbestos and cement... it is strong and durable, cannot rust, and is highly resistant to corrosion. Installations can be completed under adverse weather, temperature or terrain conditions. No complicated equipment is required.

For further information write to Johns-Manville, Box 60, New York 16, N. Y.

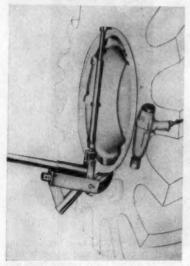


Johns-Manville TRANSITE PRESSURE PIPE

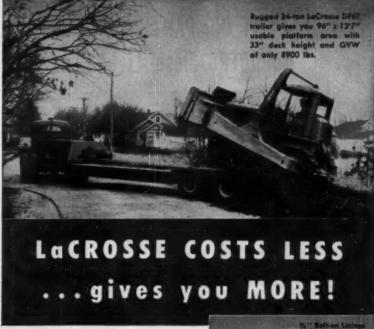
AN ASBESTOS-CEMENT PRODUCT



SPEED REDUCTION DRIVES — A complete new line of shafting speed reduction drives is now available for mounting in vertical positions. They can be supplied in both 13 to 1 and 20 to 1 ratios for requirements through 42 hp. The units can also be supplied with a torque-arm overload release which gives protection to the driven machine, motor and drive, for operations where jam, choke or shock loads may occur.—The American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa.



TIRE HELP—A Giant Bead Loosener for the big tires used on off-the-road equipment is a tool that exerts up to 10,000 lb pressure on the bead to help break away from the tapered bead seat rims now used on these type wheels. A long arm provides the necessary leverage to force the tapered steel fingers between tire bead and rim flange. A screw, operated by a ratchet wrench or impact wrench, then breaks the bead away from the rim.—Bishman Mfg. Co., Osseo, Minn.



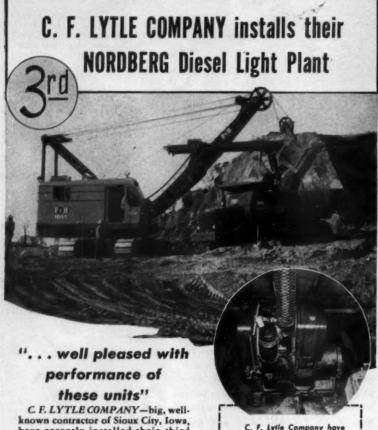
Why increase your costs for trailer transportation, when you can get famous LaCrosse dependability at savings of 5% to 25% over other leading low beds! And look at all the EXTRA ADVANTAGES you gain with LaCrosse! Up to 2000 lbs. more PAYLOAD capacity per trailer! Bigger, more dependable brakes! Stronger "one-piece" gooseneck! New histrength tapered spindles, with replaceable brake spiders! All this -PLUS new lighter weight spoke wheels, more durable lengthwise decking. Call or write for complete moneysaving facts today.



Biggest, Safest Brakes in the industry!

Husky 12½"x 5" LaCrosse design, with constant rise 5-cam and worm gear slack adjusters, insures cooler running, quicker stops — without slipping or grabbing. Equipped with tough ¾" botton linings which last up to 45% longer than other types — plus an exclusive new botton spider which is easily replaced without removing axle assembly.

The second secon	formation on LaCrosse trailers:
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C. F. LYTLE COMPANY—big, well-known contractor of Sioux City, Iowa, have recently installed their third Nordberg Diesel Engine Generator Set, which have all been used for lighting on three different power shovels. Reports show that they are "well pleased with the dependable performance of these Nordberg units".

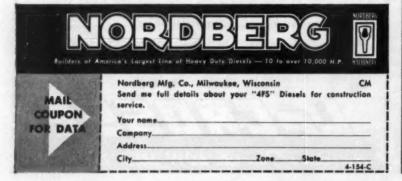
Experienced contractors like C. F.
Lytle Company have to be sure that their
equipment stays on the job—day and
night—that's why more and more
operators are using Nordberg "4FS"
Diesels for shovel lighting—for energizing crane magnets—for powering
small shovels and cranes—and for
scores of other heavy-duty construction
jobs.

Clip and mail the coupon for free literature.

C. F. Lytle Company have installed Nordberg one-cylinder Diesel Generator like this in three power shovels—two P&H units and one Marion.

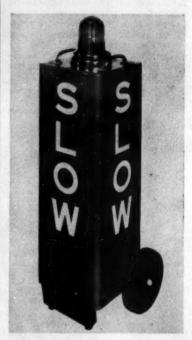
Built in 1, 2 and 3-cylinder sizes from 10 to 45 hp, Nordberg heavy duty medium speed Diesels are available as straight power units with stub shaft or clutch power takeoffs—as generator sets producing from 6 to 30 K.W.

NORDBERG MFG. CO., Milwaukee, Wisconsin





WELDIT SALAMANDER — The Weldit Salamander is designed to generate 151,200 Btu's and consumes 7 lb of L-P gas per hr. It requires no priming or pumping, has positive control with no smoke or soot. The floor-type design is 22 in. high, 19 in. wide, and weighs only 13 lb.—Weldit, Inc., Detroit, Mich.



WARNING SIGNAL—This warning signal is portable and consists of a flashing amber light visible from any angle. Is powered with a storage battery which is automatically recharged with a built-in charger. It is mounted on heavy 8-in. rubbertired wheels and is balanced so that it can be easily moved. The amber flashing signal light will operate for 30 continuous hours. The unit is made of heavy-gage steel with a baked enamel finish with the word slow in large letters appearing on all four sides. — General Scientific Equipment Company, 2700 W. Huntington St., Philadelphia 32, Pa.

ANOTHER WAY YOU SAVE WITH FORD TRIPLE ECONOMY



New Ford F-700 BiG JOB is the low-cost leader of extra-heavy work. Up to 19,500 lbs. GVW, 34,000 lbs. GCW. New gas-eaving, Low-Friction 138-h.p. Power King V-8.

New driver comfort cuts trucking costs!



Deluxe Cab shown, extra cost.

New Driverized Cabs cut fatigue! Big, curved, one-piece windshield for better visibility. Exclusive Ford seat shock snubbers to level the ride. New non-sag springs. New, free-breathing woven plastic upholstery that lasts longer, gives year-'round comfort.

"Cut your speed after dark."

Helping the driver do a better job saves money by saving valuable truck time. What's more, driver comfort is an incentive for safety and for better vehicle care that prolongs truck life, cuts maintenance costs.

Only a Ford Truck gives you full benefit of these savings. For only Ford has the *Driverized* Cab, most comfortable of truck cabs, with its time-saving controls. For complete information, see your Ford Dealer, or write: Ford Division, Ford Motor Co., Dept. T-9, Box 658, Dearborn, Mich.

SAVE WITH ALL THREE!

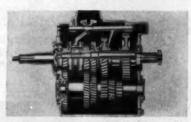
- 1. Gas-Saving Power!
- 2. Driver-Saving Ease!
- 3. Money-Saving Capacities!

 And . . .

Ford Trucks last longer, too!



Electric-shift 2-speed exle has faster, more positive shift action than vacuum type. Convenient button control on gearshift lever.



Synchre-Silent transmission for shifting ease. Four-speed standard, 5-speed direct (shown) or overdrive at extra cost.

FORD TRIPLE ECONOMY TRUCKS



In winter, one-way trip, one-way rigid, reversible trip, and Veetype Wausau plaws can be interchanged quickly with buckets on SHOVELOADER. Plaws follow ground contours, through loader's hydraulic floet action, getting them right down to the surface. Big 2½ cubic yard coal and sow buckets are available.



Spring, summer, and fall SHOVELOADERS do hundreds of jobs in addition to leading trucks. They are ideal for stripping jobs like this. The full width bucket lets the wheels follow wherever the bucket digs.

Operator has full visibility and is located away from moving control arms.



Waight of the SHOVELOADER distributed over a 100-inch wheelbase and 74-inch wheel tread lets it work in soft sugar sand. Low center of gravity and rear wheel oscillation contribute to traction and stability. Four wheel, 3 to 1 planetary reduction drive with big, hi-flotation tires



SHOVELOADER'S long, forward reach (minimum is 3 feet at top of lift fully dumped) spots leads in the center of any hauling equipment used. Its "triple action" bucket lets you pick up heaping loads at every bite. Planetary drive doesn't let drive wheels slip: you get full traction all the time.

4-WHEEL DRIVE SHOVELOADER master of tough jobs!

Actual case histories prove that the powerful 4-Wheel Drive SHOVELOADER can out-perform other equipment on almost any job...two choices of power, diesel or gas; three choices of steering

> ...front wheel, rear wheel, or four wheel steer. Ground gripping, four wheel drive traction gives it the power to do all jobs shown. Triple action bucket

Get your copy of Bulletin AD 55 cycle makes it fast and efficient. Three to one planetary drive axle ends reduce torque on drive line 300 per cent, making it more durable, dependable, and smoother operating. Moving bucket arms are remote from the operator for greater safety and full 360° visibility.

We'll send you the eight-page, illustrated brochure immediately upon request. It gives full details and specifications. Just contact our distributor or write The Baker-Lull Corporation, 355 West 90th Street, Minneapolis 20, Minnesota.



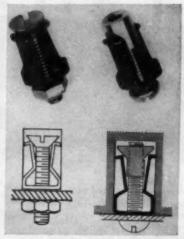






NEW MASONRY SAW—Here's a masonry saw which incorporates some unusual features. It has an extra wide table for greater stability, unitized arm construction and adjustable base for better blade alignment. A light, portable dust collector

is available as optional equipment. Conversion to an accurate slab cutter is a relatively simple job. It can also be reconverted for table mounting. Additional information can be obtained from the Construction Machinery Sales Co., Waterloo, Iowa.



DUAL EXPANSION ANCHOR—The Wyem dual expansion anchors are simple to install and require no setting tool. They are used in applications to concrete, brick, tile, marble, glass, wood, metal and similar materials. They are rustproof and have tremendous gripping power because of design and construction and will withstand sudden shock and vibration. They are obtainable in all sizes to fit standard machine screws.

—Wyem Products Co., Inc., 2292 So. Taylor Rd., Cleveland 18, Ohio.





One-Man Cradle-Trailer PORTABLE ROLLER



Eliminate expensive outlay for portage trailer with the TRUE-ROLL. One man can mount, hitch to truck, and drive away in 3 ½ min.

Marine reverse means smooth shifting —no jerks. Short turning radius makes it excellent for tight space. Large or small contractors appreciate the cost savings and small crew advantage with the TRUE-ROLL.

- Wisconsin Air Cooled Engine
- · 3 speeds forward, 3 reverse
- · Weight unloaded, 3900 lbs.
- · With water ballast, 5800 lbs.
- · Overall length, 86"
- · Wheel Base, 54"
- · Height, 59"
- · Width, 40 3/4"
- · Cradle-Trailer, 250 lbs.



PARTNERS of Efficiency



MANUFACTURERS

of

CONSTRUCTION

E OU I PM E N T

Doug-Lynn MANUFACTURING COMPANY
339 FIFTEENTH STREET - OAKLAND 12, CALIFORNIA

FLEXCO HINGED
BELT FASTENERS

For joining grader, trencher, ditcher and other earth moving conveyor belts.

U. S. Patent No. 2,477,855

- For belts 36" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. " Lexington St., Chicago 44, III.

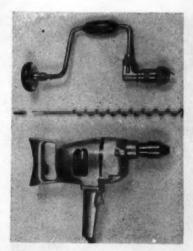


NEW STRAPPING METHOD—A new method of strapping brick shipments has been introduced by Inland Wire Products Co., 3947 S. Lower Ave., Chicago 9, Ill. The machine tensions the strapping, cuts it to exact length, and effects the mechanical interlocking of the two overlapping ends of strapping.

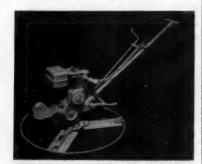
NON-FLAMMABLE HYDRAULIC FLUID FILTER—All models of the Marvel Synclinal sump- and line-type filters have been adapted for use in the filtration of all types of non-flammable hydraulic fluids. No changes have been made in the basic Synclinal design which provides that all-important balance between maximum active filtering area and sufficient storage capacity for filtered out particles. They are available for either sump or line installation, in capacities from 5 to 100 gpm.—Marvel Engineering Co., 625 W. Jackson Blvd., Chicago 6, III.



CHOP-SAW ATTACHMENT—The EPCO chop-saw attachment for the Porter-Cable electric hand saw, Model 108, is designed to give greater flexibility and ease of adjustment in cutting such materials as wood, metal, plastic, ceramics and similar materials. The attachment weighs only 24 lb—36 lb with motor, so it is easily handled by one man. Complete with adjustable mitering table and fences, it is priced at \$97.50 or at \$195 with the Porter-Cable saw.—Edker Pope Co., 1527 East 7th St., Los Angeles 21. Calif.



TWO-WAY BIT-The new Irwin 2-Way "Hex" Shank now makes it possible to use one wood bit with both bit braces and electric drills. The wood bit comes equipped with a conventional taper shank for use in bitbrace chucks, but the top section can be cut off and the same wood bit can be used efficiently with either the bit braces or electric drills. It is available in sizes from 4/16 to 7/16 .-Irwin Auger Bit Co., Wilmington,



NEW TROWELER-A completely new idea in concrete finishing machines is the retractable wheel feature of the Model T-1 troweler. With the rubber-tired wheel it becomes a one-man troweler, as the machine is fully portable after finishing a concrete floor or slab. The operator moves troweler to side of work, drops wheel, and thus requires no assistance in moving it. Another feature resulting from the built-in wheel and stand is the method for mounting and removing troweling and float blades. With the wheel down, blades and ring are raised 2 in. above the floor, and are instantly removable. Blades can be removed for washing or for changing from float to finishing in seconds. Ring is removable so that the machine can be wheeled through a doorway. The Model T-1 is a 34-in. troweler carrying three blades and a 36-in. ring. Total weight is 130 lb.-White Manufacturing Co., Elkhart, Ind.

Pick the right jack from the world's MOST ADVANCED line of hydraulic jacks



EXAMPLE: 50-ton model GB-11 fits into cramped guarters -- is one-man operated. Note short handle. Following are other big features:



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Over 50 well-equipped authorized repair stations assure repair service whenever you need it.

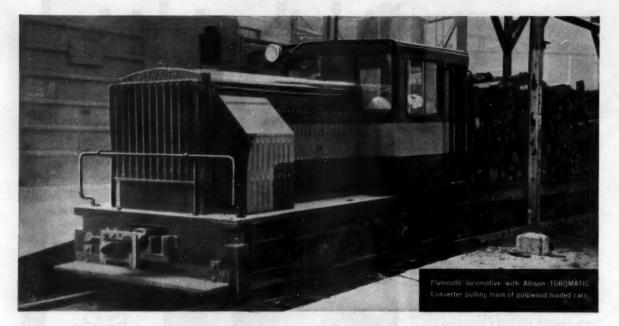
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HYDRAULIC EQUIPMENT .



Shock-Free Power Transmission Saves \$500 a month

PRODUCTION jumped almost 100% when, in December 1950, one 18ton locomotive equipped with an Allison Torque Converter replaced two 12-ton trolley-type locomotives owned by West Virginia Pulp and Paper Company.

Immediate savings came to \$500 a month - the cost of a locomotive coupler. The trolley-type locomotives damaged an average of one coupler each month but smooth power transmission by the Allison TOROMATIC Converter eliminated this replacement expense.

And by November 1953, savings in couplers alone paid for a second Allison TOROMATIC-equipped locomotive.

Maintenance on these two units is

"practically nil" because the Allison Converter automatically matches engine power to load demand, prevents engine lugging and drive-line shocks. Each unit uses less than 1 gallon of Diesel fuel an hour, pulls trains up 41/2% grades, works an average of 16 hours per day.

Savings on Other Types of **Heavy-Duty Equipment**

Allison TOROMATIC Converters and TOROMATIC DRIVES cut costs and boost production in a wide range of heavyduty equipment.

An Arizona mine gets 41% longer tire life on big truck tires costing \$1000 or more each.

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A western contractor gets 100% longer transmission life on off-highway trucks.

Get full details on TOROMATIC Converters, DRIVES and BRAKES for your units from your equipment dealer, manufacturer or write direct.

Allison Division of General Motors Box 894T, Indianapolis 6, Indiana

ALLISON TOROMATIC CONVERTER

Simple Design - one-piece cast converter elements - minimum maintenance

Compactness simplifies installa-

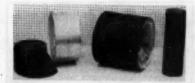
Designed for power application in the 40 to 400 h.p. range

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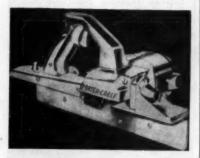


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FIRST MATCHED UNITS BUILT BY ONE MANUFACTURER



NON-SLIP SURFACE—A new type of "safety-walk" brand waterproof non-slip surfacing with mineral coating of traprock has just been developed for pulley lagging. Known as types E and F, the surfacing is a thin, tough fabric plastic flexible enough to be used on any type of industrial pulley. It can be spiral-wound or applied in sections. It is easily and quickly applied, is fireproof and resistant to oil, grease and water. It is available in rolls up to 24 in. wide.
—Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn.



ELECTRIC PLANE-A heavy-duty electric plane with a cutter that shears off wood at the speed of 25,000 rpm has just been introduced by the Porter-Cable Machine Co. of Syracuse, N. Y. Called the Porta-Plane it removes 3/32 in. with each stroke and produces a square dead level, glass-smooth surface that needs no sanding. It weighs 91/4 lb, is 16 in. long and has a bevel adjustment that enables the plane to cut at angles from 45 deg to minus 15 deg. A deflector shoots the shavings out of the operator's way and prevents clogging of the cutter which has a spiral blade made of hardenend steel. It is powered by a 7-amp, 115-v, universal ac-dc motor. Cost is \$95.— Porter-Cable Machine Co., 36 Exchange St., Syracuse 8, N. Y.

HORIZONTAL DIGGER — This heavy-duty horizontal digger was designed for drilling in embankments, under highways and sidewalks, railroad beds and building foundations, or for laying mains and underground tines. One man can operate the unit, which is mounted on a skid for maneuverability. It will drill up to 40 ft with 10-in. dia auger or 48 ft with 12-in. dia auger. The digger is pinned to the ground with long spikes making a solid base for the force-fed drilling feature. The



... and saves \$2,380 in fastening costs

TIME was the big factor in resurfacing the Lone Pine Section of the Los Angeles-Owen River Aqueduct. Wood and steel forms had to be fastened to the old concrete. Steel wire mesh reinforcing must be supported. Old-fashioned methods were too slow. By using RAMSET JOBMASTERS and 6" Tru-Set drive pins to do the anchoring work, the time schedule was met and an estimated \$2,380 saved in fastening costs.

Just as in this aqueduct job, contractors and engineers the country over depend on RAMSET JOBMASTERS and Tru-Set fasteners for fast, economical, easier anchoring into steel and concrete.

Three Jobmaster tools and 65 sizes in 6 types of fasteners offer the widest utility and provide exactly what is needed for any specific job, from light-duty work up to anchoring into the hardest concrete or into mild steel up to 1" thick. Fastenings can be made as fast as 3 per minute—with 50 per hour an every-day figure, and cost-reduction in proportion.

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EQUIPMENT NEWS . . . Continued



Prewitt digger is chain-driven either by a 51/2- or 71/2-hp engine.-J. R. Prewitt & Sons, Inc., Pleasant Hill,

EQUIPMENT BRIEFS

To be the largest ditching machine in the world a giant capable of digging a ditch 15 ft wide and 30 ft deep is now being planned at the Gar Wood Industries, Wayne, Mich. plant. The machine will sell for about \$100,000 and will weigh 65 tons. No date has been set for the completion of this new model.

New diaphragm pumps have been added to the line of both the Essick Manufacturing Co. and its Sterling Machinery Co. Div. Both firms are located in California. The Model 4D diaphragm pump has 4-in. suction and 4-in. discharge fittings. It is furnished on a rugged steel base 16-in. steel wheels or 400:8 pneumatic tires.

The Hand-I-Hack is a portable hack saw weighing only 48 lb that will cut in any position metal, plastic or fiber stock of 3 in., or less, at any angle from 45 to 90 deg. Manufacturers are the Lipe-Rollway Co., Syracuse, N. Y.

The Des Plaines Equipment Co., 6895 Mannheim Rd, Des Plaines, Ill., is now manufacturing a new hoist which incorporates some excellent safety features. The clutch is handoperated, and the drum stops as soon as the handle is released. The brake automatically holds as soon as the lever is released and is designed to hold twice as much as the machine is intended to lift. Priced at \$250, the Model 275 will lift 300 lb at 300 fpm with a 21/2-hp engine. The Model 350, which will lift 350 lb at 300 fpm, is listed at \$325.

Yuba Mfg. Co., 351 California St., San Francisco, Calif. has announced its re-entry into the hydraulic dredge field. The company plans to build hydraulic dredges from 6 in. up for such uses as harbor construction, hydraulic fills, channel excavation, levee construction and production of sand and gravel.

HANDBOOK OF RIGGING

Condensed into this one book are all the tips, methods and techniques essential to more effective practices in industrial and construction operations. Deals with every-day maintenance operations — with the transportation and handling of heavy machinery—with the erection and demolition of smaller size structures. Covers everything from ropes, hoisting chains and hooks to

from ropes, hoisting chains and hooks, to slings and ladders. By W. E. Rossnagel, Safety Eng'r. 321 pages, over 300 illus., \$6.00.



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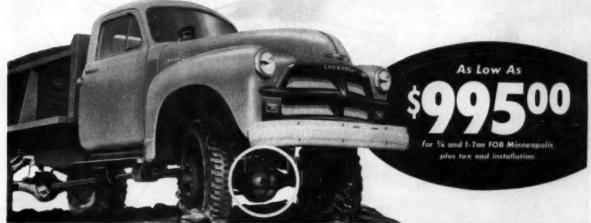
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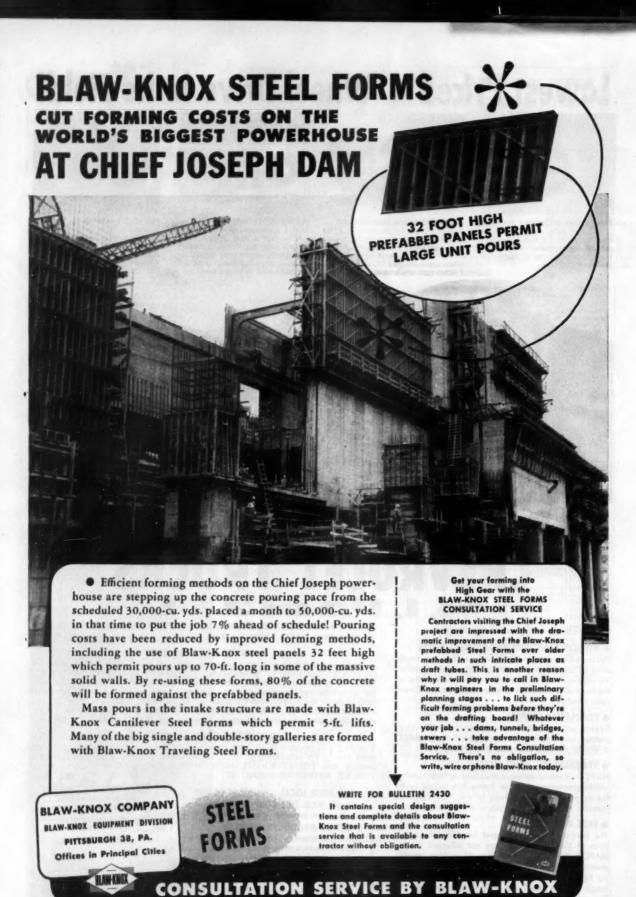
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The Kohler K90T 3.6 hp air-cooled engine with retractable starter, which weighs only 40 lb and sells for \$73.80, is now in production according to the Kohler Co., Kohler Wis.

With cold weather around the corner you may want to investigate the merits of the Kim Hotstart electric preheater for diesel and gas engines. This device plugs into any electrical outlet and through a percolator-like action keeps the engine ready for instant starting regardless of the weather conditions. You can find out more about this preheater by writing the Kim Hotstart Mfg. Co., West 917 Broadway, Spokane 1, Wash.

The Demag universal excavator B 408, series 400 as manufactured by the Demag-Baggerfabrik GMBH, Dusseldorf is now in production. With interchangeable attachments, such as shovel, dragshovel, dragline, grab and crane attachments it is powered by a 6-cyl diesel engine.

A builder's transit-level which incorporates many advantages of construction and accuracy usually found in engineers' transits of the more expensive variety are now contained in Model 65 being manufactured by the Brunson Instrument Co., Kansas City, Mo. The unit is priced at \$240, fully equipped with polished hardwood carrying case, trivet points and fixed length tripod, etc.

With help from a new booster fifth wheel and other design improvements the Hobbs Schonrock cable dump trailers are now being built longer and stronger, according to word received from Hobbs Mfg. Co., Ft. Worth, Tex. The cam lift booster atop the fifth wheel raises and supports the front end of the trailer during the first 10 percent of the dump cycle when the greatest inertia forces must be overcome and when the lifting arms are at the most disadvantageous angle. The company claims that with this and eleven other features, the cable dump is now more versatile and more efficient, with less maintenance expense than ever.

Recently introduced is a new material that quickly and permanently secures anchor bolts in concrete. Named Ankor-Set the material is a powdered compound which fast-cures when mixed with water to form a hard, impact-resistant, high-compressive strength material. It is non-shrinking and sets hard in one-half hour. It's manufactured by the Rock-Tred Corp., 7440 N. St. Louis Ave., Skokie, Ill.

Lower prices for Universal electric plants have just been announced by Universal Motor Co., Oshkosh, Wis. The average reduction is about 15% and applies on all models from the 250-w up to 25 kw.



THREE VIBER MODEL PX external vibrators consolidate ½ to 1 inch slump concrete in 1 to 4 minutes. Table, shown tilted to vertical position for stripping, is capable of handling wall panels up to 39 feet, 6 inches long and 9 feet, 2 inches high.

Vibrators produce high strength lightweight panels and beams in 1 to 4 minutes

FAST, ECONOMICAL, and thorough consolidation of the concrete is accomplished by Viber PX pneumatic external vibrators located on the under side of the casting table. Three vibrators adequately handle the 40 foot table, requiring about 1 minute of operation for 6 inch slabs, and 4 minutes for 3 inch slabs. Steel casting tables under vibration assure smooth concrete.

- The casting table is used in a similar manner for beams and columns, requiring approximately 2 or 3 minutes of vibration. Only the top is troweled, other surfaces need no troweling.
- When removing a panel, the casting table is tilted, placing the panel in vertical position for stripping. Throughout the curing process and all loading operations, panels are handled vertically, avoiding stresses that would be created by lifting from the horizontal position.
- Basalt Rock Company, Inc., Napa, California, has had many years experience in the manufacture of light-weight concrete products and are leaders in the field of factory assembled pre-cast concrete wall panels, roof slabs, beams and columns.



TABLE, shown here with forms for three beams, is also used for casting beams and columns. Note test samples which are vibrated at the same time.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, 726 South Flower Street, Burbank, Calif., Dept. 68.



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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

WINTERTIME CONSTRUCTION JOBS—How to keep wintertime construction jobs progressing on schedule by using enclosed scaffolding for protection of workmen is highlighted in the September issue of "PS Scaffolding Methods". Copies can be requested from The Patent Scaffolding Co., Inc., 38-21 - 12th St, Long Island City 1, N. Y.

LINK-BELT CATALOG — Catalog No. 950, a 340-pager shows products, such as chains and sprockets for conveying, elevating and power transmissions, enclosed gear drives, transmission products, listing of standard products for screw conveyors, belt conveyors, etc. This catalog should be especially interesting to the engineer or layout man. You can get a copy from the Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

A-C FACTS — The complete line of Allis-Chalmers diesel-powered crawler tractors is pictorially told in a 16-p color brochure titled "Facts on a New Breed of Tractors." You can obtain a copy of this catalog from the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

WILLYS INDUSTRIAL ENGINES—A new brochure describing the Willys' 4-cyl Power Giant industrial engines can be requested from Willys Motor Co., Inc., 1050 North Cove Blvd., Toledo 1, Ohio.

ATHEY TRAILERS—The new Athey universal trailer for construction use is adequately described in a folder just released by Athey Products Corp., 5631 W. 65th St., Chicago 38, III.

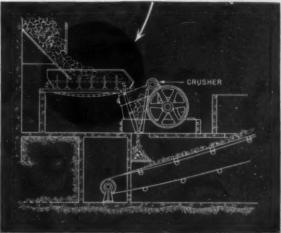
SCAFFOLDING AND HOISTING TOWERS—A 16-p general catalog, together with a price list describing the various parts employed for erection of Advance tubular steel scaffolding and materials hoisting towers, has just been made available. This brochure can be obtained from Beaver Art Metal Corp., Elwood City, Pa. Ask for Catalog 56.

THE G MAN—A new magazine devoted to "the guys who run the Gradall" has just been announced. If you would like to get on the mailing list for this quarterly publication, write to Edward L. Murray, The Gradall Man, The Warner & Swasey Co., Cleveland, Ohio.

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Clyde Patton, sales engineer, of Brunner & Lay Rock Bit, chats with Benton Bailey, assistant to general manager, and Elmer Roberts, foreman, Tungsten Mining.



Bethlehem Hollow Drill Steel bites into a quartz vein on the 700-ft level. The 1-in. hexagon alloy drill steel is fitted with carbide bits. Both were furnished by Brunner & Lay Rock Bit Corporation, Asheville, N. C.



North Carolina Mine Yields Huebnerite Tungsten Ore



Central shaft at mine operated by Tungsten Mining Corporation, Henderson, N. C., extends to depth of 1600 ft. Steel headframe is 72 ft high.

A good grade of tungsten ore, huebnerite-quartz, is being mined in, of all places, North Carolina. The underground mine, hundreds of miles from other commercial tungsten deposits, is located in rolling country north of Henderson. It is operated by Tungsten Mining Corporation, of Henderson, and is producing in the neighborhood of 800 tons per day.

The operators are using a modified system of square-set stoping, and are hoisting the strategic ore from two shafts, each 1600 ft deep. The huebnerite is found in quartz veins, with sericitic-schist walls. The country rock is a hard granite-gneiss. Drilling conditions vary, and include very hard, medium-hard, and abrasive formations.

Drilling is being done by means of jackhammers, stopers and drifters. Blast holes are 6 ft to 11 ft deep. An alloy type of Bethlehem Hollow Drill Steel, 1 in. hexagon and fitted with carbide-insert bits, is being used exclusively. The operators report that it is giving excellent service.

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POWER-TRANSMISSION EQUIP-MENT-A bulletin describing the complete line of power transmission equipment, together with brief facts on Wedgbelt drives, Shaft-King speed-reduction drives, Adjustable-Speed sheaves, Steel Split pulleys, and other products is available upon request.-The American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29. Pa.

SNOW REMOVAL EQUIPMENT -Bulletin 1060 gives complete specifications for all Baker snow plows on all models of the Allis-Chalmers motor grader and Industrial wheel tractor line. Included in the bulletin is a handy reference guide that helps eliminate snow removal problems for counties, airports, industries and cities. This bulletin may be obtained from the Baker Mfg. Co., Springfield,

VIBRO-TAMPER CATALOG-A 20p parts manual that shows all elevation views and complete assembly of the Vibro-Tamper, plus lubrication charts and operating instructions, is available in a new catalog No. D-54 which may be obtained from the International Vibration Co., 16702 Waterloo Rd., Cleveland 19, Ohio.

THE GASKET-Latest in a series of illustrated technical bulletins being distributed by Johns-Manville is "How Flange Surface Finishes Affect Gasket Sealability and Joint Performance." For those who buy, specify or design joints in which gaskets are used, this bulletin should be of definite help. You can get a copy by writing Johns-Manville, 22 E. 40th St. New York 16, N. Y.

JET SEAL-A 4-p bulletin illustrating the uses of Colfix jet seal which is a solvent-resistant coating for asphalt pavements, is now available from the American Bitumuls & Asphalt Co., 200 Bush St., San Francisco, Calif.

CORE DRILLING MACHINE - An 8-p, two-color bulletin containing information on Model 142 Core Drilling Machine has just been issued by Sprague and Henwood, Inc., Scranton 2, Pa. Besides the descriptions of the drilling machine, the bulletin also lists accessory equipment required for diamond core drilling. Ask for Copy 160.

INDUSTRIAL PUMPS—Identified as Industrial Catalog I-54, a new 108-p booklet describes practically every industrial pump manufactured by the Deming Co., Salem, Ohio. Contents of the catalog include information on construction features, performance and selection tables, and several pages of useful information related to liquid material-handling problems.

SURVEYING NEWS

NEW THEODOLITE SETS UP QUICKLY, EVEN IN THE WIND



Has this been your problem? Now-oldtype mechanical plumb-bob replaced by can't-miss optical principle



- Improved Theodolite reads horizontal and vertical circles simultaneously, through same eyepiece
- Reads direct to 1 min. with no matching of lines—no parallax
- Amazingly blur-free—small. compact, moisture-proof, dust-proof.

Mail this coupon for details

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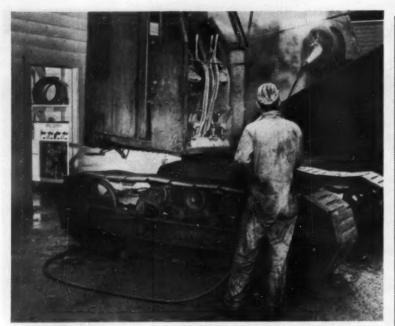
Please send me Booklet B with information on Fennel... ☐ Double bubble ☐ Alidades

- Other levels
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- ☐ Tripods
- ☐ Theodolites
- Repair of present

instruments. (any make)

NAME

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MALSBARY 250 steam cleaner cleans heavy grease, caked clay, dirt from Link-Belt shovel in 4 hours.

CLEANING EQUIPMENT?

Switch to
Malsbary
HPC* Cleaners
Get results like these:

Equipment Cleaned

D7 and D8 Tractors TD 9 Dozershovel Motor Grader 1½-yd. Shovel Clamshell buckets Payloader

MALSBARY HPC* Cleaning Time 1½-2 hours

2 hours
3½ hours
3-4 hours
30 minutes
45 minutes

*HPC (patented) = high pressure (to 400 p.s.i.) + combination of either hot solution to 325° F., cold water, or steam.

HOW MALSBARY CLEANING PAYS OFF

- Checks wear by removing abrasive, corrosive dirt, grease, road oils.
- Reduces downtime by revealing worn or faulty parts in time to replace or repair before expensive breakdowns occur.
- Saves up to 40% of mechanics' time by eliminating grease wiping.
- · Cuts painting costs.
- Increases efficiency of equipment and operators.

See for Yourself

Ask us to demonstrate on your job, against your present cleaning methods, how MALSBARY HPC Cleaners save time and do a better cleaning job. Fill in and mail coupon NOW.



Room C10, 845 92nd Ave. . Oakland 3, Calif.

Malsbary Mfg. Co., Room C10, 843 I AM INTERESTED IN —	5 - 92nd Avenue, Oakland 3, California	
On-the-job demonstration.	MALSBARY catalog-in-brief No. 150-R	
☐ "Why and How of Ste	am Cleaning" reprint.	
Name	Position	
Business		
Address		

PORTABLE ASPHALT PLANT—A booklet describing the portable batch type asphalt plant, named the New Standard, gives full details on how the entire plant can be made ready for operation in about one day. To obtain a copy of this bulletin write to Standard Steel Corp., 5001 South Boyle Ave., Los Angeles 58, Calif.

AIRCO PRODUCTS — A condensed 52-p catalog describing and illustrating Airco products covering gases, welding and cutting equipment, and accessories, is now available from Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

TANDEM ROLLERS—An interesting catalog on the advanced type of tandem roller called Roll-O-Matic is now available from the Galion Iron Works & Mfg. Co., Galion, Ohio. According to the literature, the new Roll-O-Matic can save up to 25% in fuel, prolong engine life 35% and increase the life of the forward-reverse clutches from 40 to 50%.

SMALL BOILERS—The recently announced CB50-80 line of small boilers being manufactured by Cleaver-Brooks Co. and described in a new bulletin, AD-135, are available in 50 to 80 hp., 15 to 150 lb. steam, 30 lb. hot water for heating and processing. You can get this 4-p, 2-color bulletin from the Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.

DESIGN MANUAL FOR CONCRETE REINFORCING BARS—A 64-p design manual published to introduce Webrib concrete reinforcing steel bars to builders, architects, engineers, can be obtained free from the Webrib Steel Corp., 120 Broadway, New York, N. Y.

JUNIOR BEAMS—A booklet containing pictures showing how light structurals— Junior Beams— are adapted to floor and roof design in buildings and miscellaneous uses like truck and trailer frames and construction, has just been published by the Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

JETCRETER—A 4-p folder describing the Model 240 Jetcreter is now available from the Construction Machinery Sales Co., Waterloo, Iowa.

VIBRATOR AND TROWELER— Two new circulars, one describing a concrete vibrator model and the other a new concrete troweler with retractable wheel, have just been announced by the White Mfg. Co., of Elkhart, Ind. Ask for Circulars 43 and 45.

ROLLER CHAINS AND SPROCK-ETS—Stock roller chains and sprockets is the subject of Catalog 754, a 64-p illustrated book just published by Diamond Chain, Inc., Indianapolis, Ind.

"Can't be beat for clean-up and shoulder work"

Supt. for S. J. Groves & Sons praises D Tournapull

on New York State Thruway

With 1,800,000 cubic yards to move for the Waterloo Section of the New York State Thruway, 60 miles east of Rochester, S. J. Groves and Sons Company, Minneapolis, assigned 1,100,000 yards to 10 crawler-drawn LeTourneau-Westinghouse pans. Later in the job, they brought in 6 Tournapulls—three 16-yd. "C's" and three 7-yd. "D's"—to handle 300,000 yards.

Despite wet, muddy conditions, the 6 Tournapulls moved dirt every day the crawlers could. Exclusive differential, which automatically transferred power from slipping wheel to wheel on firmest footing, took the 'Pulls through muck sometimes belly-deep.

"D's" handle 7 types of jobs

Of their 7-yd. "D's", company officials seemed particularly pleased. These 28 mph units, they pointed out, proved large enough and fast enough to work profitably in pusher fleets right along with the C Tournapulls and large crawler-scrapers. The "D's" also self-loaded to economically handle a number of scattered "one-man, one-machine" assignments, thereby keeping the bigger scrapers free for major dirtmoving. And, when production work was completed, the versatile "D's" stayed behind to clean up. In all, they handled these 7 special assignments:



Ability to turn around non-stop in space only 25'4" wide cuts vital seconds off each cycle. For other work, scraper interchanges with 10-ton rear-dump, 10-ton lift-and-carry crane, or 10-ton flatbed.

 Hauled 30,000 cubic yards of topsoil for spread on landscaped areas of approaches and overheads.
 Typical output on 1000' cycles: 20 loads (110 pay yards) per Tournapull per 60-minute hour.

Built interchanges, hauling up to 25,000 yards of sand, clay, and loam per job.

Traveled between concrete forms to self-load and remove excess gravel before paving.

4. Backfilled around bridges and culverts.

5. Cut 6 miles of ditches.

6. Finish-graded shoulders.

Used cable hitch to keep motor patrol from sliding off while finishing steep side-slopes.

"These D Tournapulls," says Project Superintendent Andy DeSimon, "are the best machines we've had for clean-up and shoulder work. They can't be beat on this scattered type of operation."

Whether you have just a few units or several fleets take a tip from S. J. Groves... investigate D Tournapulls soon! Their speed, self-loading ability, and job-to-job mobility make them ideal for use with bigger scrapers, either in production work or for clean-up. With thousands of "D's" now in the field, chances are you'll be bidding with 'em or against 'em from now on. We'll gladly demonstrate one on your present job to show why we think you should be bidding with 'em.



Cable-equipped "D" easily holds motor patrol on sideslope. Big low-pressure tires do no damage to concrete, curbs or tracks. Unit is light enough and narrow enough to drive job-to-lob through cities and over main roads. Tournapuli—Trademark Reg. U.S. Pat. Off. PDP-608-H-b



Now available... FREE — a valuable new reference book — "Earthmoving — An Art and a Science." Contains 60 pages of detailed information on how to increase output and lower dirtmoving costs. Unbiased, Written by experienced field engineers... checked by veleran dirtmovers. For your postpoid free copy, send coupon today to LeTourneau-Westinghouse Company, Peoria, Illinois.

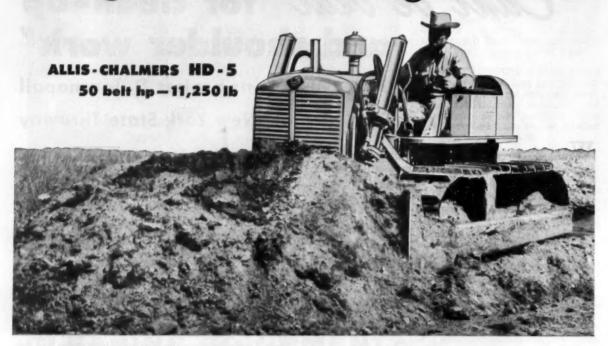
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Your name

Company

Address Street ACity - State

designed with dozing in mind



In its weight and power class, only the Allis-Chalmers HD-5 crawler gives you a tractor that is new in design and built with bulldozing in mind — with a main frame that is designed for front-mounted equipment, built-in provision for hydraulic pump, reduced front-end overhang, and better over-all balance. That is why the HD-5 does more work in its power range — at a lower cost and with less down time.

BUILT FOR TODAY'S JOBS. The pace-setting design of the HD-5 gives you important margins of safety in power, strength, and balance for longer, more productive tractor life. Each part is designed and built with a new standard of performance to meet today's increased use of tractor-mounted equipment.

BALANCED WEIGHT. The Allis-Chalmers all-steel, welded box A-type main frame eliminates dead weight and permits the weight to be placed where it will add to working strength and to tractor balance. For instance, the strong, heavy truck frames keep tracks in line constantly, contribute to better weight distribution and a lower center of gravity — with improved bull-dozing and longer life.

ENGINE-MOUNTED DOZER. The box A-type main frame also permits the use of an engine-mounted dozer, with blade located close to the tracks for improved overall balance, greater strength, and more accurate blading. This type of construction provides direct down pressure on the blade, eliminates heavy, bulky mountings that clog with material and debris, gives better accessibility for inspection and servicing.

GREATER GROUND CLEARANCE. Double reduction final drives provide ample ground clearance to take advantage of the HD-5's low center of gravity and full traction in mud, soft footing, or rough going.

Plus These Additional Money-Saving Features:

1,000-hour lubrication intervals for truck wheels, idlers, and support rollers saves time, cuts labor cost . . . unit construction for easy servicing, because box A-type main frame makes major assemblies readily accessible for inspection, adjustment, and servicing . . . operator comfort second to none, with convenient controls, full vision, easy steering, and simplified shifting.

Write for detailed literature or contact your Allis-Chalmers dealer. He will be glad to demonstrate the advantages of the HD-5.

FILLIS - CHALMERS
TRACTOR DIVISION - MILWAUKEE 1, U. S. A.

STAINLESS STEEL ELECTRODES

—A new 16-p data sheet compiled for ready reference to assist in the selection of the proper grades of welding rod for a given grade of stainless steel is now available from the Crucible Steel Co. of America, P. O. Box 88, Oliver Bldg., Pittsburgh, Pa.

FILTERING INFORMATION—"No Short Cuts to Safe Filtering" is the title of a new 8-p booklet pointing out the necessity of efficient dependable filtering of lubricating oil in Caterpillar equipment. Ask for Form 31085 from the Caterpillar Tractor Co., Peoria, Ill.

BULK MATERIAL HANDLING—Various types of equipment and structures for handling bulk materials are described in a 32-p well-ilustrated booklet just published by the Dravo Corporation, Neville Island, Pittsburgh 25, Pa. The booklet discusses mechanical, electrical and structural features of such equipment as ore and coal bridges, man trolley unloaders, rope-operated towers, replacement trolleys, hydraulic buffers and rail clamps.

RUST REMOVER—A new non-acid rust-removing material that simultaneously strips paint, rust and primer from ferrous metal surfaces is called Rustgon. It is a liquid alkaline material requiring only two steps—a dip and a pressure rinse. The new product is completely described in a 4-p brochure that can be obtained from the Turco Products, Inc., 6135 South Central Ave., Los Angeles 1, Calif.

GROUTING—A 16-p folder describing the Embeco non-shrink method of grouting, common methods of grouting, different types of equipment, the mixing and placing of grout, cold and hot weather grouting, and other information can be obtained from the Master Builders Co., Cleveland 3, Ohio.

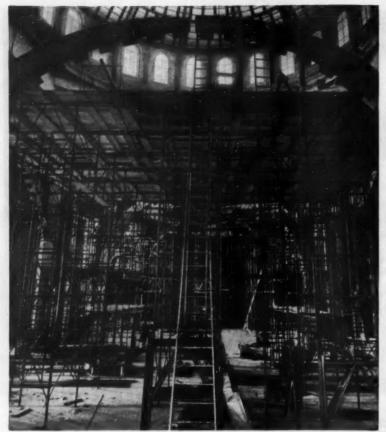
MITI-MITE — The P&H Model 55 Truck Crane, the Miti-Mite, is completely described and illustrated in a new 16-p catalog. You can get copies of this bulletin by writing Harnischfeger Corp., 4604 West National Ave., Milwaukee 46, Wis. Ask for No. TX-152.

ALEMITE PUMPING LINE—A 32-p catalog of "Versatal" materials handling material has just been published by the Alemite Div. of Stewart-Warner. The booklet which describes a typical system consisting of air-operated pump, pipe, tubing or hose, spray guns and extruding guns, covers the field close to encyclopedia form. The booklet is of particular utility to maintenance construction men. Request Catalog No. 35-12 from the Alemite Div., Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago 14, Ill.



John W. Hobbs Corporation

2070 YALE BLVD. SPRINGFIELD, ILLINOIS



Hard-to-reach areas are no problem for Safway Scaffolding at Chicago's new St. Constantine Church (Christopher John Chamales, architect)

Modern Methods Speed Church Completion

John S. Reed's "Most Difficult" Plastering Job Simplified by Safway Scaffolding

ONE OF THE FINEST JOBS of lathing and plastering ever seen in Chicago was completed in less than six months by expert journeymen of the Reed Plastering Co. Intricate work on the new St. Constantine Church—much of it close to 70 feet above the floor—was handled efficiently from safe, roomy Safway Scaffolds.

For faster, better, safer work,

scaffold every job with Safway. Safway fits 'em all—high or low, large or small, routine or unusual. Safway Scaffolds will give you important overall job savings.

WRITE FOR BULLETIN



Write today for free illustrated bulletin. Submit your problem to Safway or your local Safway distributor for scaffolding recommendations.



RENTED and SOLD by distributors everywhere

BIG JOBS OF THE MONTH . .

Continued from page 32

Turner Construction Co., 420 Lexington Ave., New York City 17. Cathedral of the Assumption of the Blessed Virgin Mary, Baltimore, Md. for Diocese of Maryland, Chancery Office, 408 N. Charles St., Baltimore. \$8,500,000.

John A. Johnson & Sons, Inc., 303 41st St., Brooklyn 32, N. Y., foundations and general construction for Coney Island houses, Brooklyn, for New York City Housing Authority, 299 Broadway, New York 7, N. Y. \$4,242,000.

George Sheaf & Co., 449 Neilston St., and Christopher Construction Co., 8 East Broad St., Columbus, Ohio, Jackson Pike sewage treatment plant, Columbus, for the city, City Hall, Columbus, Ohio. \$1,-911,937.

Mellon Stuart Co., 210 East Parkway, Pittsburgh, Pa., brick, concrete and steel sound laboratory and test center at Sharon, Pa., for Westinghouse Electric Corp. P.O. Box 868, Pittsburgh 30, Pa. \$5,000,000.

McCloskey & Co., 1620 W. Thompson St., Philadelphia, Pa., sedimentation basins and equipment at Torresdale Filter Plant, Philadelphia, for Procurement Department, City Hall Annex, Philadelphia. \$3,-148,511.

Fischer Construction Co., 4053 Clifton Ave., Cincinnati, Ohio, Type T-35 and T-71 and structures, 17.66 mi. highway, Harrison Twp. and village of South Bloomfield and Hamilton Twp., Franklin and Pickaway Counties, Ohio for State Highway Dept., Columbus, Ohio, \$2,092,125.

S. Patti Construction Co., 1340 Admiral St., Kansas City, Mo., and Massman Construction Co., 20 West 9 St., Kansas City, Mo., Mid-Continent International Airport No. 2 building overhaul base for TWA, for city, c/o Reed McKinley, dir. Public Works Dept., City Hall, Kansas City, Mo., \$5,288,800.

Daniel Construction Co., 429 N. Main St., Greenville, S.C., wool processing plant, Jamestown, for Santee River Wool Combing Co., c/o Prouvost Lefabvre Co., c/o Branch River Wool Co., Woonsocket, R.I. \$3,000,000.

HIGH-STRENGTH BOLTING

means:

faster, easier, safer, quieter structural erection

.. and greater strength

- Faster because there is only one simple process involved — no disassembly of fitting-up bolts is required.
- Easier because a two-man team can do the job quickly with just a pneumatic wrench and a hand wrench. (Actually one man can do it.)
- Safer because no heat is required. Men handle the bolts faster, with more confidence. Also, there is no body-jolting recoil from the power wrench.
- Quieter because no pneumatic hammer is used. This is particularly important in hospital zones, school zones, or any area where noise is objectionable.
- Greater strength because highstrength bolts are stronger themselves than rivets and they form

stronger joints. The two hardened washers that are used prevent imbedding into the structural steel and so the high clamping load is uniformly maintained. Less maintenance and inspection is required with high-strength bolts. And they will last as long as the structure without trouble. Yet, if necessary, unbolting is not difficult.

With all these advantages, worthwhile savings usually result with high-strength bolting despite their THE KILROY STRUCTURAL STEEL COMPANY speeded structural erection and cut costs on their Terminal Building tower job at the Cleveland Airport with high-strength bolts from U.S. Steel Supply.

HERE A ONE-MAN "TEAM" installs highstrength bolts.

higher initial cost. The biggest savings factor is the greatly increased speed of erection.

CALL U. S. STEEL SUPPLY

Top quality, dependable highstrength bolts—in all the sizes commonly used—are available for immediate delivery at U.S. Steel Supply warehouses. For more detailed information . . . call, write or wire our nearest warehouse, and send for our free booklet.

U. S. STEEL SUPPLY

DIVISION

General Offices
208 So. La Salle St., Chicago 4, III.



Warehouses and Sales Offices Coast to Coast United States Steel Supply 208 So. LaSalle St., Chicago 4, Ill. Gentlemen: Please send my free copy of your booklet

"Structural Steel Bolting."

Company

City.....Zone State....

UNITED STATES STEEL

Gradall stars on toughest turnpike!

On the 87-mile West Virginia Turnpike, generally regarded as the toughest turnpike yet, contractors have really proved how Gradalls pay off! In this extremely rough terrain—almost every mile a cut, a fill, or a bridge—this job made major projects of two Gradall specialties, dressing slopes and trenching for and positioning drainage pipe. Gradall's importance on this turnpike shows up in their work records—from 60 to 140 on-the-job bours every week!



Gradall shows its "arm-action"—to uncover slide-damaged drain pipe, lift it clear, dig out the slide, and reposition pipe. "If we didn't have a Gradall, we'd have had to use hand labor," said the Project Engineer. "Any other machine would tear up the pipe just getting close to it!"

GRADALLS PAY OFF ON ALL THESE TURNPIKE JOBS!

- e Ditching
- Trenching for drain pipe (frequently in rock)
- · Loading pipe onto trucks
- Unloading and positioning pipe
- · Backfilling
- · Excavating channel
- · Crone work
- Hand labor finishing and cleanup
- Grading
- Dressing slopes
- · Loading out stumps
- · Placing crib walls
- Placing rip-rap
- Materials handling
- Placing concrete
 forms
- Loading boulders (up to 1 ton)



Gradall specialty! Dressing slopes on one of numerous fills in the rough terrain through which the West Virginia Turnpike passes.

Here's what some of the Gradall contractors on this job say about their Gradalls:

Nello L. Teer, Sr., Nello L. Teer Co., Durham, N. C.—
"A Gradall is essential for the completion of any job.
We have six Gradalls and that expresses our opinion of the machine."

Project Manager Leo Donelson, Condon-Cunningham Co. and Peter Kiewit Sons' Co., Omaha, Nebr.—"Our Gradall really delivered on this job! It handles all the short run work that supports the main contract.

"On any contract, these so-called 'little' jobs frequently add up to a pretty big item. It's a place where your profit or loss can be made on a close bid."

Project Manager J. M. Lipscomb, Morrison-Knudsen Co., Inc., Boise, Idaho and Ralph E. Mills Co., Frankfort, Ky.—"The Gradall saved us more money on this job than any other machine we have. We've used it to dig in rock and for lots of other tough jobs. On many jobs like cleaning ditches a Gradall will replace 50 men."

Project Manager John Slate, Latrobe Road Construction Co., Latrobe, Pa.—"We do jobs with our Gradalls that you couldn't do with any other machine. Each Gradall is worth 40 hand laborers."



Gradall Distributors
in over 75 principal cities
in the United States and Canada

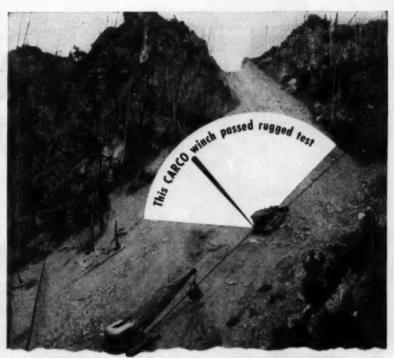
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(Continued on page 210)



CARCO winches held fast when slippage meant disaster

... on tough Alberta to Vancouver pipeline job



Towing and holding heavy equipment on steep grades is a severe test of a winch brake. On the Model J Carco winch, the automatic self-energizing brake will hold any load the winch can pull. It takes hold the instant tractor clutch is disengaged. Full braking power comes from high ratio leverage contracting the band on brake drum. Brake unit is reversible, permitting under- or overwind free-wheeling. Brake release mechanism gives the operator complete load control at all times. The load can be checked at any point and even be "inched down. Brake is enclosed, protecting it from the elements or external abuse.

Mr. G. T. Guest, Assistant to Project Manager of Comstock Midwestern, Limited, builders of "Big Inch-by-Inch", says, "The job needed Carco winches for towing and holding heavy machinery on steep grades and even for holding men by life lines. Had a single winch failed, men and machinery would have been lost. We found Carco winches equal to everything we asked of them."

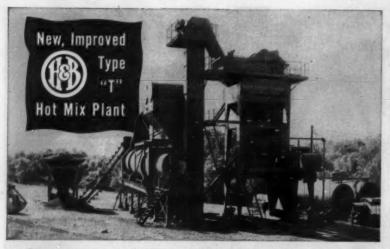
On top of hill a Model J Carco winch is winching the Carco J winch and International TD24 shown above up steep slope at Coquihalla Canyon while it, in turn, is winching up clam digger.

You can expect greater value from the leading producer, and get it from Carco, first in winch production. PA-CIFIC CAR AND FOUNDRY COMPANY, Renton, Wash. Branches at Portland, Ore., and Franklin Park, Ill.

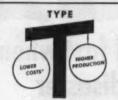


WINCHES

FOR ALL INDUSTRIAL TRACTORS



Increased Production—Lower Maintenance Costs



*Both original and maintenance

New Structural Design—Allwelded bent plate construction.

Flat Screen—Adequate screening area on all sizes.

Self-Contained Dust Bin—Empties directly into weigh box, eliminating screw conveyor.

Trunnian Roll Drive—on dryer, eliminating vibration and reducing maintenance costs.

The new H & B Type "T" incorporates, in the basic plant, all of the major improvements of the past 20 years. New structural design and many exclusive features combine to make a plant that has already established outstanding records in both production and maintenance.

In addition to the features listed at the left, air controls and self-contained over-flows are standard equipment on all Type "T" plants. No loose pieces to move or erect. 4 sizes—from 25 tons to 160 tons per hour—to meet your requirements. Available with electric, Diesel electric, Diesel or gasoline power. Factory wired plants available when electric power is used.

For specifications and complete information, write for Bulletin T-54.

HETHERINGTON & BERNER INC.

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RETREAD CRAWLER-TYPE TRACTORS!



YOU BET! Use Marquette's "Tractor Strip", the easy to weld, low-cost retread that restores full pulling power to your worn grousers! No special rod or technique needed for fast, sound application. Cuts labor and "down time" to the bone! Special alloy is highly abrasion- and impact-resistant for extra long wear. Available in random-length bars of 10 to 14 feet, or cut to your specifications.

For complete information on low prices, see your jobber or write:

MARQUETTE MANUFACTURING CO., INC.

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ROLLING OUT TURNPIKES TURNPIKES is a MULTIFOOTE JOB!

THE highly competitive bidding, the many miles of travel, the need for fast output, make ease of operation, crawler endurance, water capacity, simplicity of maintenance and other paver advantages important on Turnpike work. MultiFoote Pavers have proved their ability to roll out Turnpikes.

MultiFoote shovel type crawlers with their self-cleaning action stand up under miles of travel. Large, extra tank capacity reduces water delays. Simplicity of design makes upkeep easy and cuts "down" time and many other advantages assure fast output.

These are just a few of the reasons why there are more MultiFoote Pavers sold each year than any other make and why there are more MultiFoote Pavers in service than any other make. MultiFoote advantages have established records for output and mileage laid down on extensions of the Pennsylvania Turnpike.

If you are bidding on Turnpike Work you need the proved depenabilty of the MultiFoote. Ask for details on MultiFoote advantages.

MULTIFOOTE CONCRETE PAVER

FOR EVERY PLACE CONCRETE MUST BE POURED

A Check List of Paver Advantages You Should Have

- High operating platform for faster, safer operation
- V Plenty of water capacity
- √ No pressure water tank unaffected by line pressure or grade
- ✓ Rotary power discharge—faster in cleaning the drum
- Double Cone Drum with scouring action—easier to keep clean —less tendency to "build up"
- √ Wide skip—easy for trucks—
 easy to re-reeve—takes less cable
- √ Shovel-type crawlers and side
- ✓ Highlift Boom easily installed for off-highway work
- Other advantages for easier upkeep, faster output and easier operation

BLAW-KNOX COMPANY FOOTE CONSTRUCTION EQUIPMENT DIVISION

1910 State Street Nunda, New York





The figures given in this ad were scaled at the Centerline Tank Plant, Detroit, Michigan by representatives of the Weightmasters Division of the Michigan State Highway Department.

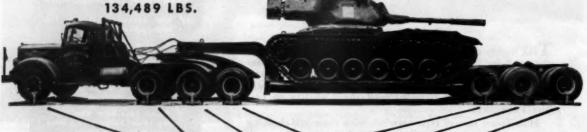


41,340 LBS.

WEIGHT OF LOAD



LOADED VEHICLE 134,489 LBS.



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81% 8220	37% 7660	36% 7440	24% 4920	22% 4420	20% 4450	20% 4230	30% 41,340
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6 to 7 4 ft. 3 in. FIRST TO LAST 53 ft. 7 in. 1 to 2 2 to 3 3 to 4 4 to 5 5 to 6 AXLE SPACING 11 ft. 6 in. 4 ft. 0 in. 25 ft. 1 in.



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY

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WELLMAN-WILLIAMS DRAGLINE BUCKETS



THE Wellman-Williams Dragline Bucket is perfectly bal-THE Wellman-Williams Draginic Edition and hitch anced, light in weight, has a wide digging radius and hitch connections for fast adjustment of digging depths. Alloy steels provide maximum strength with minimum dead weight. Teeth are made of manganese steel and are reversible. Perforated type dragline buckets also available.

It's a WELLMAN — built to dig and last while digging.

N ENGINEERING CO.

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Please send me a free copy of bulletin on:

- Clamshell Buckets
 Dragline Buckets
- Stone Grabs ☐ Log Grabs

Your Name...

Address_

City_

Position.

Company.

October 1954 — Construction METHODS and Equipment — Page 213



Superior-Lidgerwood-Mundy has the facilities and experience to meet them . . . either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

WRITE FOR BULLETINS AND CATALOGS

UPERIOR LIDGERWOO MUNDY CORPORATIO

Main Office and Works: SUPERIOR, WISCONSIN, U. S. A. New York Office, 7 Day Street, New York 7, N. Y.

Power in a handy



Easy to move because it's balanced. Doors of this portable Electric Plant open for operation. Entire weatherproof housing is quickly removable for servicing. Gas tank is underneath for extra safety. Dependable "U.S." unit is D.C. for bettery charging or operating portable tools. Available also in A.C. "U.S." builds the world's most complete line. Write for information, briefly stating your requirements.

UNITED STATES MOTORS CORP 420 Nebraska St.

Oshkosh, Wis.



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CONSTRUCTION AETHODS AND EQUIPMENT

880 West 42nd St., New York 36 -LO 4-8000 E. E. WEYENETH, Advertising Sales Manager HOWARD T. OLSEN, Business Manager

Sales Representatives

New York 36, 330 W. 42nd St. H. T. BUCHANAN Philadelphia 3, 17th and Sansom Sts. R. H. LARSEN Atlanta 3, 801 Rhodes-Haverty Bldg. W. D. LANIER, JR. Cleveland 15, 1510 Hanna Bldg. W. E. DONNELL Chicago 11, 520 N. Michigan Ave.
KNOX BOURNE, D. J. McGRATH St. Louis 8, Continental Bldg.
B. F. HORN Dallas 1, First National Bank Bldg. J. H. CASH Los Angeles 17, 1111 Wilshire Blvd. H. L. KEELER San Francisco 4, 68 Post St. R. E. DORLAND

Other Sales Offices

Detroit 26: 856 Penobscot Bldg. Pittsburgh 22: 738 Oliver Bldg. Boston 16: 350 Park Square Bldg. London E.C. 4: 95 Farringdon St.

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EMPLOYMENT - BUSINESS
EQUIPMENT - USED OR RESALE EQUIPMENT

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\$1.50 a line, minimum 3 lines. To figure advance payment count 5 average words as a line. Positions Wanted undisplayed advertising rate is one-half of above rate, payable in advance.

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The advertising rate is \$15.75 per inch for all advertising appearing of other than a contract basis. Contract rates quisted on request.

An advertising inch is measured %" vetically on one column, S columns—30 inches—to a page. and NEW ADVERTISEMENTS to N. Y. office, 330 W. 42nd St., N. Y. 36, N. Y. for November Issue closing October 26th.

REPLIES (Box No.): Address to office nearest you NEW YORK: 330 W. 42 St. (36) CHICAGO: 520 N. Michigan Ave. (21) SAN FRANCISCO: 68 Post St. (4)

WANTED

Construction, light equipment for use in home building, etc., wanted for our dealers overseas. Suitable for sale or rental. Exclusive agency basis. Perma-Stone International Ltd., 320 Fifth Avenue, New York 1.

ENGINEERS-FOREMEN-OFFICE MEN

Learn latest methods to organize and run work. Prepare for the top jobs. Send post card for details GEO. E. DEATHERAGE & SON

CONSTRUCTION CONSULTANTS 411 5th Ave., Lake Worth, Florida

GIANTS UNDER THE EARTH

GIANTS UNDER THE EARTH
The Construction of the Brooklyn-Battery Tunnel
This is the story of the key men of the miraculum.
Sith century—those hardy human sandings who due
under water and blasted through earth and rock to
build the slick, modern tunnels we use today for
fast metor and railroad traffic.
Hillustrated and photos. Per copy
Bend check or money order to
PATRICK J. COSTELLO
132 E. 48th St.
New York 17, N. Y.

CRAWLER TRACTOR GRADER BUILDER 141

i—Allis Chaimers HD15 Diesel has performed no heavy diggins. Only operated approx. 500 hrs. to compact and central casel storage pile. Priced low for quick sale. Contact W. G. Campbell

OLD BEN COAL CORP. WEST FRANKFORT, ILL.

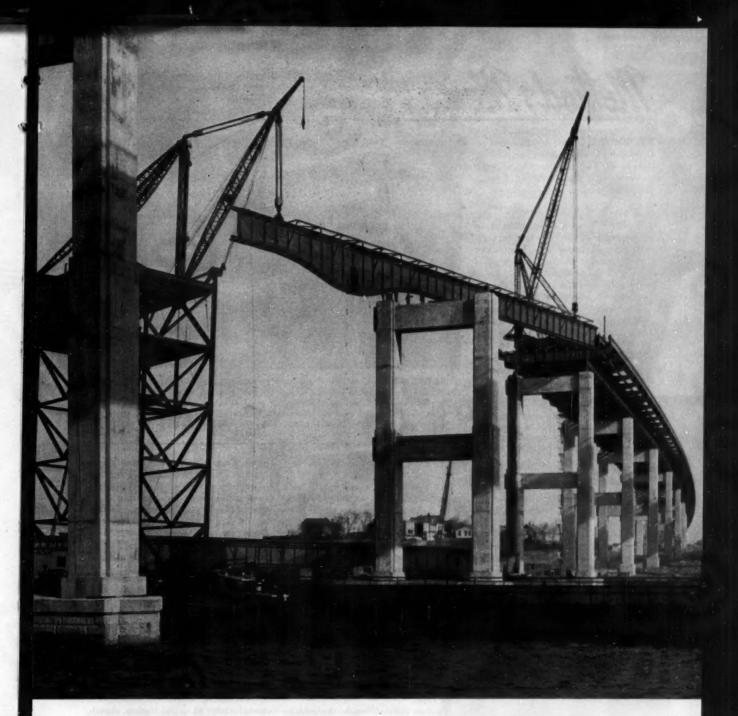
FOR SALE END LOADER-OLIVER OC3

COAKLEY & BOOTH, INC. 55 East 43rd St. New York 17, N. Y.

Your inquiry will have

Special value . . .

If you mention this magazine, when writing advertisers. Naturally the publisher will appreciate it...but, more important, it will identify you as one of the men the advertiser wants to reach with this message... and help to make possible enlarged future service to you as a reader.



Wire Rope at Work—Spanning the Raritan River near Perth Amboy, N. J., this 4400-ft bridge is an important link in the Garden State Parkway, a \$285,000,000 turnpike that will provide almost effortless driving to New Jersey shore points. The Parkway's 165 miles will extend from near Paterson to Cape May, the southernmost finger of the state.

The photograph above shows a 200-ton girder being lifted into place on the bridge piers. Bethlehem wire rope handled the load, and a touchy job it was, too. But Bethlehem rope is made for chores like this, and the job went off without a hitch. A responsible assignment, one typical of the heavy lifting and hauling work entrusted to this strong, supple rope in industries the country over.

RETHLEHEM

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors the country over stock Betblebem rope for the following industries and numerous others:

CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

Methods Memo.

WE GOOFED in our identification of a revolving crane shown at Folsom Dam in the August issue. And we want to share with you the letter from a sharp-eyed reader.

Dear Sir:

We have become so accustomed to the accuracy of the reporting in Con-STRUCTION METHODS AND EQUIPMENT that any kind of an error, even a small one, is all the more noticeable.

We refer to Page 55 of the current August issue where the photograph of a Washington revolving crane in the foreground is captioned, "Clyde whirley crane . . .". There are actually two Washington cranes in the scene, one in the foreground and a similar Washington revolving crane in the background.

Maybe we have been spoiled by the alertness and cooperation shown by Ray Bloomberg, with whom we have worked from time to time in helping to run down photos or facts for other stories. It's a case of Bloomberg being wiser than Wise, at least when it comes to recognizing a Washington crane.

David Pollock Agency Seattle, Wash.

CRAWLER TRACTOR VENTURES are big news this fall. The long-awaited Euclid TC-12 is showing off its muscles (see page 98). Also, the 13-ton Eimco 105 tractor is being introduced to construction as a prime mover for heavy operations. Readers will recall this unit better as the crawler mounting for the Eimco Rocker Shovel, described fully in CM&E last year (p. 138, Nov. 1953). Special features include finger-tip control, operator seated up front, Cummins diesel engine and Allison torque converter. It has been fitted with a 12-ft 4-in. dozer blade.

THE 10-YEAR HIGHWAY PLAN proposed by President Eisenhower last summer, is being implemented rapidly. The president's advisory committee is headed by Gen. Lucius D. Clay (USA-ret.), board chairman of Continental Can Co. Appointed to serve with him are William A. Roberts, president of Allis-Chalmers and a past vice-president of the American Roadbuilders' Association; Stephen D. Bechtel, San Francisco construction executive and a member of the Associated General Contractors; David Beck, president of the AFL International Brotherhood of Teamsters; and S. Sloan Colt, presi-



CM&E EDITORS Ralph Lewis (left) and Hank Perez get checked out on the new TC-12 by Euclid's Bob Garner, before having a private interview with a contractor who had used the big crawler for 6 weeks on one of his regular jobs. Picture was snapped by Euclid Photographer Brad Kish who, along with Lewis, took photos for our exclusive article giving the contractor's opinion of the TC-12 and its capabilities, beginning on page 99.

dent of the Bankers Trust Co., New York.

The president's committee will work in a coordinating capacity—working with the road committee of the Governors Conference, headed by Gov. Walter Kohler, Wis. Other groups tying in will be a special cabinet committee on transportation headed by Commerce Secretary Sinclair Weeks, the Bureau of Public Roads, Bureau of the Budget and probably congressional leaders.

SUCTION EXCAVATING for vertical and horizontal underground pipe installations is a new method claimed by the Soviets. Equipment is said to consist of a steel cylinder up to 3.3 ft (1 meter) in dia, a vacuum pump, an agitating motor, a crane, a truck and some wire rope.

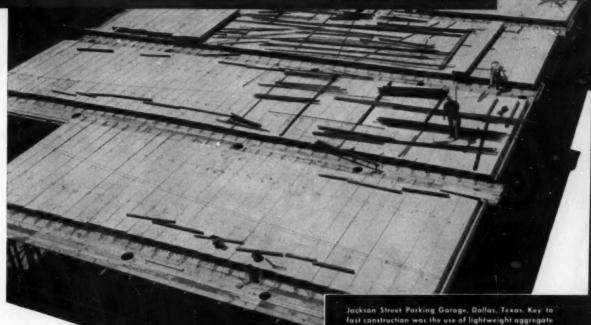
Vacuum created inside the cylinder is said to total several tons, enough to take out tightly packed ground. Agitating the cylinder within the hole is claimed to compress the earth around it, making later lining unnecessary. This report comes to us from Vienna where it is stated the method, developed by Soviet engineers Paraubek and Fisdel, was first described in a Russian publication dated 1952.

TIMBER CONSTRUCTION plays a big part today, and the general contractor will do himself a favor by becoming better informed with the best application of that universal building material, wood. Comprehensive standards covering the design, fabrication and erection of engineered timber construction have been published by the American Institute of Timber Construction, national service organization of the industry. Write for your copy of the "AITC Timber Construction Standards" to the Institute at 1757 K Street, N.W., Washington 6, D. C. The price is \$2.

ANOTHER BIG MANUFACTURER is moving into the construction equipment field. Otis Elevator Co., New York, well-known maker of elevators and moving stairs, announces that it will acquire the assets of the Baker-Raulang Co. of Cleveland, maker of industrial materials handling and mining equipment. Two years ago, Baker-Raulang acquired Baker-Lull Corp., Minneapolis, manufacturer of shovel loaders, shovels and other attachments for tractors.

MASONRY CONSTRUCTION should benefit from the program initiated by the newly formed Allied Masonry Council, consisting of representatives from the structural clay products, natural stone, marble and granite industries and the masonry unions. The objective is to gather and distribute to contractors and architects new and vital information about masonry methods and materials. Information about the group and its work can be obtained by contacting Joseph P. Moore, 1700 Summer St., Stamford, Conn.

300-car garage built in 27 working days...



POZZOLITH*

employed to help meet concrete requirements

The advantages obtained with Pozzolith in producing the two types of concrete used in this parking garage were as follows:

- In the precast concrete joists, Pozzolith permitted the design of a workable mix of low unit water content, thereby economically providing increased strength, reduced shrinkage, and greater bond of concrete to steel.
- 2. In the ready-mixed concrete, placed in slabs, columns and beams, Pozzolith was used as a retarder because of the 100 to 105° temperatures that prevailed. Pozzolith also improved workability, permitting easy placement of high slump concrete without developing segregation, plus all of the other advantages of low unit water content.

Pozzolith will aid you in meeting your concrete requirements. Used in more than 25 million cubic yards of concrete since 1952.

POZZOLITH... reduces unit water content up to 15% for a given placeability and fully complies with the water-cement ratio law. Pozzolith is produced in three standard formulations—High Early Pozzolith, Normal Pozzolith and Low Heat Pozzolith—to give the results required under varying job conditions.







THE MASTER



BUILDERS



Subsidiary of American-Marietta Company

Atkinson-Ostrander Construction Co. achieve best results with TIMKEN° carbide insert rock bits and TIMKEN Rock Bit Engineering Service



LOCATION: The Dalles Dam, 95 miles up the Columbia River from Portland, Oregon.

OPERATING CONDITIONS: Lava basalt formation which varied from medium hard to extreme hardness.

for the best bit ... for every job

TIMKEN

ON their first project at the Dalles Dam in Oregon, Atkinson-Ostrander Construction Company used Timken Rock Bit Engineering Service to determine the best bit for drilling a lava basalt formation varying from medium to extreme hardness. A Timken® carbide insert bit was selected which gave better results than any others tested.

Timken carbide insert bits give highest speed through hard and abrasive ground. They're most economical for constant-gage holes, small diameter holes, extremely deep holes.

However, they are not the best solution for all your drilling problems!

Timken multi-use bits are most economical for ordinary ground. With correct and controlled reconditioning, they'll give the lowest cost per foot of hole when full increments of steel can be drilled.

To be sure you're using the right bittype and design, call on the Timken Rock Bit Engineering Service. Twenty years of solving rock bit problems have given them the experience that will help you cut your drilling costs.

Timken carbide insert and multiuse bits are interchangeable in the same thread series. This means you can change bit types quickly, easily as the ground changes—right on the job!

Both Timken carbide insert and multi-use bits are made from electric furnace Timken fine alloy steel and have special shoulder unions which protect threads from drilling impact.

For help with your particular drilling problem, write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit